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AMERICAN Journal of Public Health AND THE NATION'S HEALTH

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American Public Health Association

Atlantic City, N. J., October 19–23, 1959

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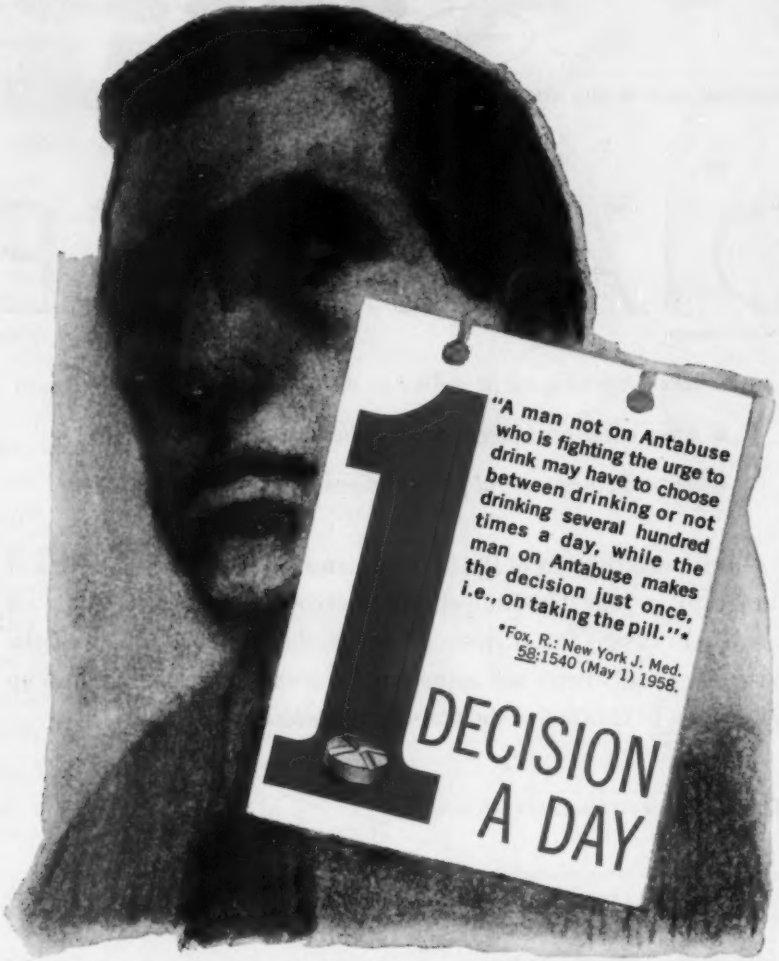
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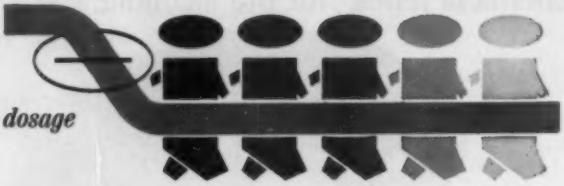

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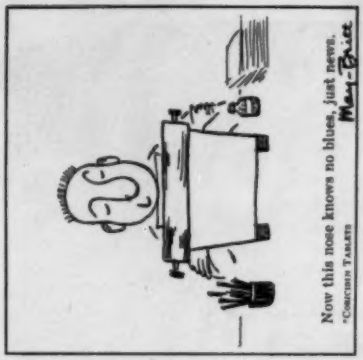

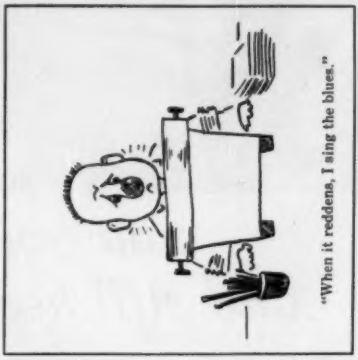

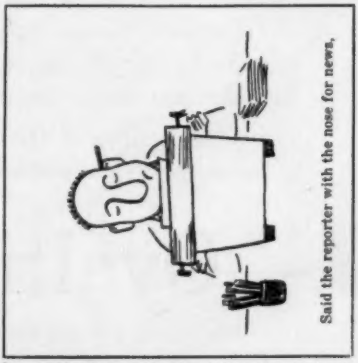

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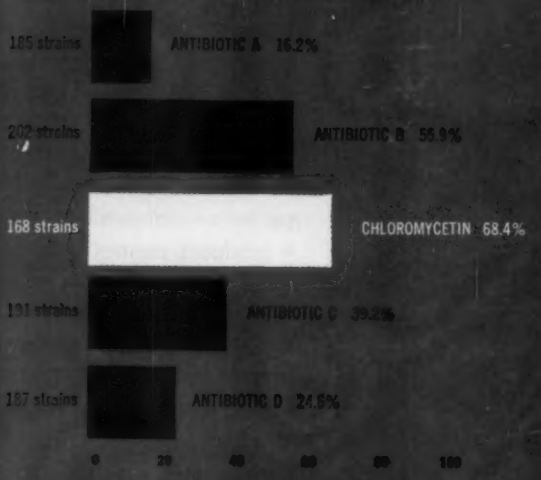

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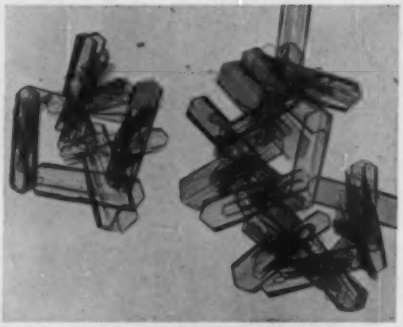

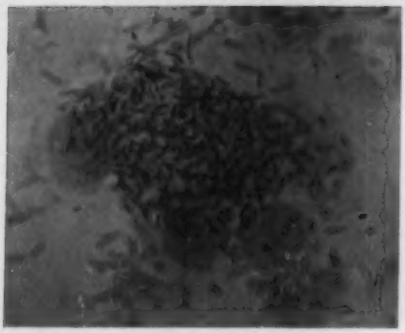

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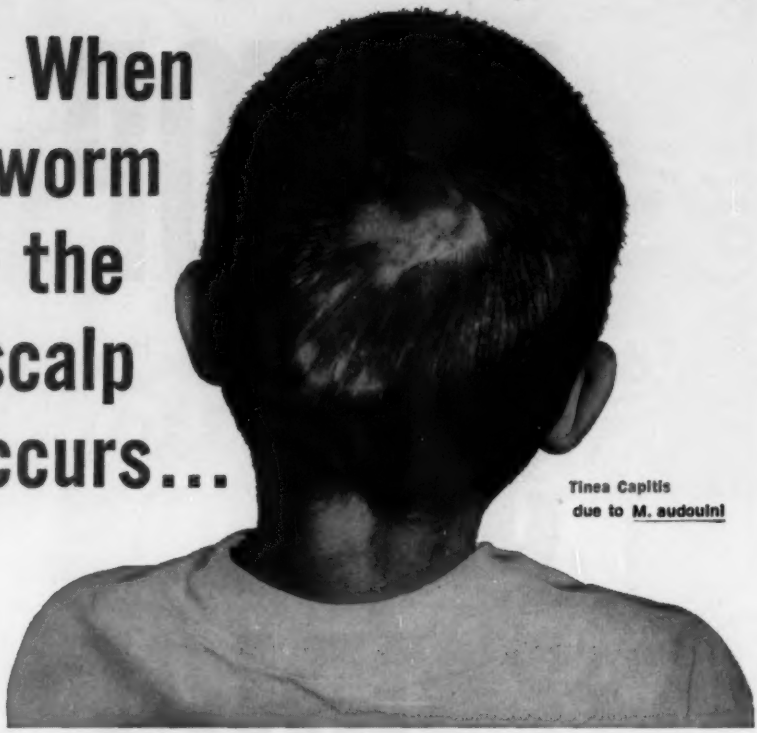

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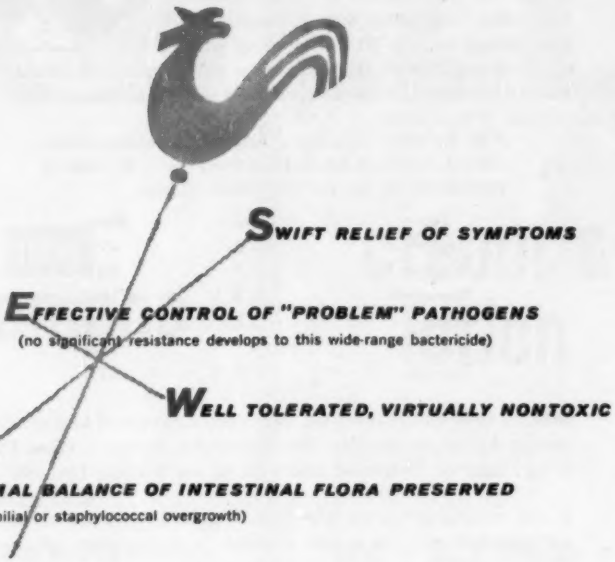
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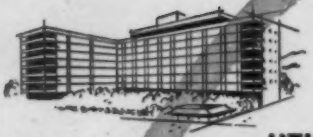

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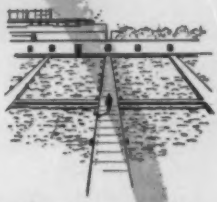

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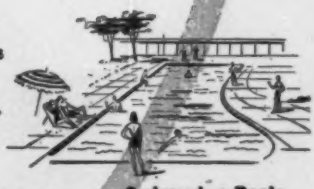

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*Proceedings of the Nutrition Symposium Series, No. 8, Symposium on Protein Metabolism. New York, National Vitamin Foundation, Inc., March, 1954.

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*Tisdall and Jolliffe note the systemic relation in animals between vitamin C and resistance to infection, with increased needs evident in upper respiratory streptococcal infections.

— In: Clinical Nutrition ed. by Norman Jolliffe et al. New York, Paul B. Hoeber, Inc., 1950, pp. 590-91, 637-38.

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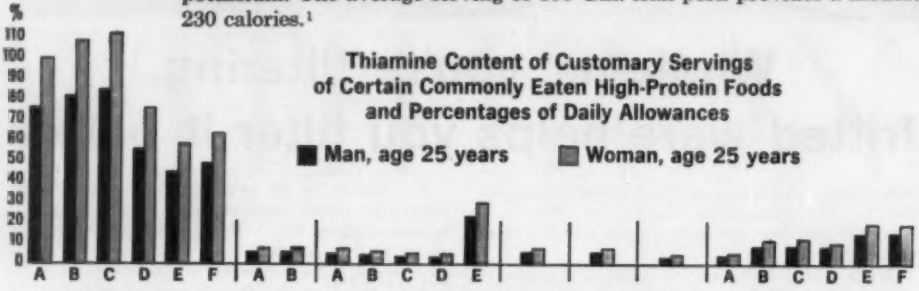
The other nutritional values of pork are also substantial. For example, average servings of 3½ ounces (100 Gm.) of lean pork supply 34 grams of protein, 9 grams of fat, and, like all other meats, significant amounts of all the B vitamins and the minerals iron, phosphorus, magnesium, and potassium. The average serving of 100 Gm. lean pork provides a modest 230 calories.[1]



Cooked Lean Pork Meats (100 grams)

A. Chop, loin center cut 3" x 2¼" x 1" 1.18 mg. Bt
B. Roast, sirloin, 2 slices 2½" x 1" x ⅛" 1.27 mg. Bt
C. Bacon, Canadian-style 4 slices, 1.32 mg. Bt
D. Ham, roast, cured shank end 2½" x 2" x 1", 0.90 mg. Bt
E. Ham, Steak, fresh, 2 slices 3" x 1½" x ½", 0.68 mg. Bt
F. Sausage, link, 2½ links average, 0.76 mg. Bt

Poultry (100 grams)

A. Chicken, roasted, 3 slices 3½" x 2½" x ¼", 0.080 mg. Bt
B. Turkey, roasted, average, 3 slices 3½" x 2½" x ¼", 0.081 mg. Bt

Fish and Sea Food (100 to 240 grams)

A. Cod Fish cakes, 1 large 125 grams, 0.071 mg. Bt
B. Halibut steak, cooked 100 grams, 0.061 mg. Bt
C. Salmon, canned, ½ cup 100 grams, 0.030 mg. Bt
D. Tuna, canned, drained ⅓ cup solids, 100 grams, 0.050 mg. Bt
E. Oysters, meat only, raw 1 cup, 240 grams, 0.350 mg. Bt

Eggs, 2 (108 grams)

0.080 mg. Bt

Milk (8 fl. oz., 245 grams)

0.090 mg. Bt

Cheese

cheddar, American, 60 grams, or cottage cheese, 100 grams. Both, 0.020 mg. Bt

High-Protein Vegetables (80 to 130 grams)

A. Beans, canned or cooked ½ cup, approx. 130 grams, 0.060 mg. Bt
B. Lentils, dried, cooked, ½ cup, 95 grams, 0.130 mg. Bt
C. Asparagus, cooked, ½ cup cut pieces, 100 grams, 0.130 mg. Bt
D. Beans, lima, green, cooked ½ cup, 80 grams, 0.110 mg. Bt
E. Peas, black-eyed, immature seeds, cooked, ½ cup, 80 grams, 0.230 mg. Bt
F. Peas, green, cooked, ½ cup 80 grams, 0.280 mg. Bt

1. Leverton, R. M., and Odell, G. V.: The Nutritive Value of Cooked Meat, Oklahoma Agricultural Experiment Station, Oklahoma State University, Miscellaneous Publication MP-49, 1958.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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nutritive composition of average cereal serving

	Cereal, 1 oz. Whole Milk, 4 oz. Sugar, 1 teaspoon	Cereal** 1 oz.	Whole Milk 4 oz.	Sugar 1 teaspoon
CALORIES	203	104	83	16
PROTEIN	7.3 gm.	3.1 gm.	4.2 gm.	
FAT	5.3 gm.	0.6 gm.	4.7 gm.*	
CARBOHYDRATE	32.2 gm.	22 gm.	0.0 gm.	4.2 gm.
CALCIUM	0.169 gm.	0.023 gm.	0.144 gm.	
IRON	1.5 mg.	1.4 mg.	0.1 mg.	
VITAMIN A	195 I. U.	—	195 I. U.	
THIAMINE	0.16 mg.	0.12 mg.	0.04 mg.	
RIBOFLAVIN	0.25 mg.	0.04 mg.	0.21 mg.	
NIACIN	1.4 mg.	1.3 mg.	0.1 mg.	
ASCORBIC ACID	1.5 mg.	—	1.5 mg.	
CHOLESTEROL	16.4 mg.	0	16.4 mg.*	

*Nonfat (skim) milk, 4 oz., reduces the Fat value to 0.1 gm. and the Cholesterol value to 0.35 mg.
**Based on composite average of breakfast cereals on dry weight basis.

Cereal Institute, Inc.: Breakfast Source Book. Chicago: Cereal Institute, Inc., 1959.

Hayes, O. B., and Rose, G. K.: Supplementary Food Composition Table. J. Am. Dietet. A. 33:26, 1957.

Watt, B. K., and Merrill, A. L.: Composition of Foods-Raw, Processed, Prepared. U.S.D.A. Agriculture Handbook No. 8, 1950.

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Journal of Public Health

Where are we going in the health and welfare field? What are the issues that will concern us in the coming decades? Here is an illuminating discussion of these questions relating them to basic economic, political, and social trends.

TRENDS AND ISSUES IN SOCIAL WELFARE EXPENDITURES AND PROGRAMS

Wilbur J. Cohen

DURING THE PAST ten years, the productive capacity of our nation has grown remarkably. Although the average rate of growth of the gross national product has been 3 per cent a year since 1900, during the past ten years it has been 4 per cent a year. Despite temporary setbacks, real family incomes have increased about 20 per cent over the last decade. If our economy continues to grow during the next ten years by at least the same rate it has grown during the past ten years—and there is every reason to believe it could grow at a somewhat larger rate—we have some very important choices before us in determining the course of our social welfare programs and expenditures.

The former secretary of health, education, and welfare, Marion B. Folsom, stated the challenge facing us very clearly:

> In the new age we are entering, our society will have the resources and the power, the opportunity, to banish many more of the burdens that have beset mankind through the centuries. For the first time in human history a great nation will have the material resources, the wealth in being, to eliminate hunger and scarcity and poverty, to provide a decent level of living, for a whole people. Life may no longer have to be, for anyone, a grim struggle for bare existence.
>
> Our society also will have, or can have, the knowledge and power to abolish—to a far greater extent than ever before—age-old burdens of disease and disability and pain. We will have far greater resources and opportunities than ever before to erase ignorance and to encourage more effectively the intellectual development of many more of our young people.
>
> I say our society will have the resources and the power to do these things. But will we use this power—and use it wisely? Will we have the vision to assign the proper priorities for the investment of the resources available? Will we take a sufficiently long view in setting our goals? These are crucial questions.*

* Folsom, Marion B. Some Suggested Adjustments in the Use of Our Resources. Address before the American Philosophical Society, April 24, 1958.

Establishing Social Priorities

As we attempt to build upon and expand our existing social welfare programs, an ever-present factor comes into play with increased importance—the growing recognition of the need for more deliberately determining our short-run objectives in relation to our long-run goals.

Our expanding labor force and national product, the growth of our population—especially the number of children, the aged, and the disabled—the growth of suburban areas, the mobility of our population, the exodus of Negroes from the South to northern metropolitan areas, the influx of Puerto Ricans to the mainland, and the continued flow of persons from rural areas to urban centers, have created all sorts of social needs which press for immediate solution.* We need more schools, more roads, more hospital beds, and more housing. We want more teachers, more doctors, nurses, social workers—and we will have to pay them more to get them in competition with the demands of science, business, and other professions.

We not only want to expand our educational system, our social insurance programs, our health services, and to improve our public assistance programs, but we wish to improve the quality of the services given. We wish to have more extensive child welfare services and services for mentally retarded children, better programs to deal with juvenile delinquency and the mental health needs of both adults and children. We need more neighborhood centers, counseling and rehabilitation services, and recreational programs. This list could be expanded at great length. But more and more we are coming to recognize that while there remains much to do, and there is much more that we can do than we are doing, we cannot do all we want to do at once. Moreover, money alone is not the sole limiting factor. Increasingly, it may become of less importance. The lack of trained personnel may be an even more important bottleneck. Consequently, certain social priorities must be established in determining what we want to and can do first, how the costs are to be distributed, how we obtain the necessary trained personnel, and through what institutional means we will try to achieve our objectives.

At both the professional and legislative levels we will have to give more weight in determining priorities for the training of personnel, as well as to the most appropriate institutions for dealing with our needs, whether through private or public auspices or combination of them. When we evaluate private arrangements we must give attention to the many kinds of efforts by individuals and families and to the activities of voluntary associations, employers, unions, collective bargaining, the nonprofit associations in health and welfare, and commercial insurance enterprises. When we consider the use of public arrangements we must define the roles of the federal, state, and local governments—not always an easy task. And when we come to consider the relationships between governmental and nongovernmental organizations we shall have to steer a difficult course between abstract principles and pragmatic experience which may test all our wisdom and skills.

We face a very different task today in charting a course for social welfare than we did in 1929 or 1935. Then we had the advantage of a relatively clean slate and the availability of talented and highly motivated personnel, but with the great disadvantage that many administrative problems had to be solved. We have gained "know-how" in administra-

* For the reasons why our social welfare expenditures have increased see: Cohen, Wilbur J. "The Impact of Social and Economic Forces on Health and Welfare Programs." In the Objectives of Public Welfare Administration and the Leadership Role of the Public Welfare Administrator. Chicago, Ill.: American Public Welfare Association, 1958.

tion. We have gained a reasonable degree of competence in financial, actuarial, and economic planning of programs. But today we have a pluralistic, piecemeal system with many vested interests —a jigsaw puzzle of many parts—with more diverse arrangements than we had in 1935. Furthermore, with each passing year it becomes more difficult to make basic changes in the structure as institutionalization and rigidities take hold. Recalling what Sir William Beveridge has said, we must be most careful that as we attempt to adjust our social welfare institutions to our changing needs that we do not permit the good to become the enemy of the better.

The Magnitude of Social Welfare Expenditures

In discussing trends in social welfare programs the first important factor to note is the magnitude of existing expenditures for these purposes—because while they are substantially below our needs they are much more than most persons usually assume.

Total expenditures—public and private—for all social welfare activities in the fields of health, education, and welfare in the United States reached about $60 billion for 1957, according to the best estimate I can make.* This is equivalent to about 14 per cent of all the goods and services produced in the nation (the gross national product).

This is an impressive and significant measure of the importance which the United States places on human values. Too frequently the objectives of our economic and political institutions have been advertised or evaluated solely in terms of materialistic accomplishments to our disadvantage both at home and abroad.

A review of existing social welfare programs and expenditures shows that, as a nation, we believe in developing the capacities and creativeness of the individual to the maximum, in strengthening family life, and in using a wide variety of public and private social welfare institutions to promote the general welfare.

Despite the gaps and shortcomings in our programs, it is clear that the American people have accepted the principle that government, business, and voluntary agencies should have as their goal the attainment of a "state of welfare" for all people.

In many instances, government and business are reluctant to admit or explicitly declare their acceptance of these goals for fear they may be charged with belief in the "welfare state" (whatever that might mean). But in the good pragmatic pattern of our heritage, legislators, businessmen, and others act increasingly in a socially conscious manner even when they vigorously deny the similarity in objectives with social workers.

Ends and Means

As we scan the growth of social welfare institutions since the turn of the century and the proposals being considered for further improvement, the so-called "controversial" issues today revolve less around the fundamental "principle" of assuming social responsibility and more around such complex issues as alternative methods of administration and allocation of costs. These elements become important because of the concern about incentives, the relationship between governmental and nongovernmental agencies, and the proper timing of particular proposals in relation to other needs. These are all complicated

* For definitions and classifications of these expenditures see: Dewhurst, J. Frederic, and Associates. America's Needs and Resources: A New Survey. New York, N. Y.: Twentieth Century Fund, 1955, Chapters 10, 12, and 14. See also: Merriam, Ida C. Social Welfare in the United States, 1934-1954. Social Security Bull. 18, 10:3 (Oct.), 1955; Social Welfare Expenditures in the United States, 1954-1955. Ibid. 19, 10:3 (Oct.), 1956; and annual articles in the October, 1957, and 1958 issues of the Social Security Bull.

questions involving technical decisions in which persons sharing the same broad goals and philosophy may have strong differences of "principle" on what to others may seem "details" or "methods."

Perhaps I can illustrate my point in another way. With the acceptance of the basic objectives of public responsibility in some of the fields of health, education, and welfare by the Eisenhower administration, the controversies turn now to such complex issues as the formulas for federal grant-in-aid to the states; the role of the states, localities, and the federal government in urban renewal and juvenile delinquency; who shall pay for extended unemployment insurance benefits; and similar financial and administrative questions. Increasingly, social policy formulation may involve knowledge and decisions on specific issues of great complexity and less on those which can be easily shown to involve exclusively great matters of ethical principles which will arouse emotional and moral crusades. This may change the whole character of social action in social welfare issues.

Increased Public Expenditures

Social welfare expenditures from public funds have grown significantly in the past decades. In 1890 all public expenditures for health, education, and welfare amounted to about 2.4 per cent of the gross national product. In 1929, just before the advent of the great depression, this figure had grown to 4.1 per cent. During the fiscal year 1957 (the latest for which information is available) the figure was 8.8 per cent. It is clear from a number of studies* that public expenditures for social welfare activities will continue to increase both in dollars and in relation to our total economy.

The Rockefeller Report issued in April, 1958, made a number of recommendations for changes in some of our health, education, and welfare programs.† The report includes projections of the public expenditures involved in their recommendations. For all three types of programs it is estimated that public expenditures of about $33 billion in 1957 should increase to somewhere between $62.5 and $75 billion by 1967.‡ Omitting education, for the other two types of programs it is estimated that public expenditures of $20 billion in 1957 should increase to between $38.5 billion and $45 billion in 1967. This will involve a doubling of dollar expenditures. Can we attain this goal in the next decade without unduly burdening our economy? I think we can, if we maintain a healthy, growing, expanding economy.

These expenditures for health and welfare amounted to 4.6 per cent of the gross national product in 1957. Depending upon the future gross national product, the projected expenditures for 1967, in the Rockefeller Report, range from 6 to 6.6 per cent of the gross national product. Thus, while public expenditures are estimated to double in terms of dollars, the increase is about 40 per cent in relation to the gross national product.

Total Social Welfare Expenditures

Let us now look at the situation from the standpoint of all social welfare expenditures, public and private. A true measure of the impact of social welfare programs upon individuals and the economy involves the combination of both

* Veterans' Benefits in the United States. Findings and Recommendations of the President's Commission on Veterans' Pensions (the Bradley Commission), April, 1956, pp. 117-126. The Bradley Report contains projections of public income maintenance expenditures to 1985. Under one set of assumptions, expenditures for 1985, measured as a per cent of national income, are nearly twice those of 1955.

† The Challenge to America: Its Economic and Social Aspects. New York, N. Y.: Doubleday, 1958, p. 78.

‡ Ibid., p. 68.

public and private expenditures. Unfortunately, a periodic total of both kinds of expenditures is not available. The Twentieth Century Fund made an estimate for the year 1950,* and a projection for 1960, and with some modification and broadening in this approach I have prepared the estimate of $60 billion for 1957.

My estimates differ somewhat from Dewhurst's classification for 1950, the most important being that I have included payments for private life insurance and annuities. The 1957 estimates are preliminary and subject to revision. Mrs. Merriam's estimates deal only with the public civilian programs and differ somewhat from the Dewhurst's definitions and mine.

Private expenditures (or more specifically, all nonpublic expenditures) for health, education, and welfare are equal to about half the public expenditures or about one-third of the combined total. The private share is highest for health (about 66.6-70 per cent) and the lowest for education and welfare (about 20-25 per cent).

Private expenditures may be identified as direct consumer expenditures, such as individual and family expenditures for medical care and education; employer and employee contributions for retirement, disability, and life insurance; and philanthropic contributions to private agencies. Somewhat different forces are at work in these three areas. While we cannot explore here the vast impact of these forces, we can illustrate some of the likely differential effects upon different programs.

Contributions to health, welfare, and pension plans will undoubtedly increase in absolute amounts and probably relative to the gross national product, although this will depend upon the extent of changes in our social insurance programs. Payments by individuals for life insurance, while increasing in absolute amounts, may remain relatively stable in relation to the increased gross national product while payments for health insurance increase. There are conflicting forces at work which may change these trends as income increases and people make different decisions as to how they wish to spend their incomes.

Health Expenditures

Several long-term trends are most evident in the field of medical care. These may be summarized as follows:

1. There has been an increase in the share of the national income allocated to medical care.
2. An increasing proportion of medical care costs is being met through insurance and through public funds.

Both trends appear likely to continue in the future. Total medical care expenditures have quadrupled during the past 25 years; the per capita expenditures have trebled; the proportion of the total spent from public funds has more than doubled; and a larger percentage—closer to 5 per cent at the present time, instead of 4 per cent as in the past—of our national income goes for medical purposes.

Total medical expenditures average over $100 per year for every man, woman, and child in the nation. The total medical bill in the broadest sense of the term is thus about $20 billion for the country as a whole.† The consumer's share in these costs—while increasing in absolute amounts—has been decreasing relatively as the share from public sources increases. Philanthropy and business provide a small but slowly increasing share of the total.

* The Dewhurst estimates for the calendar year 1950 were $12.3 billion for health, $10.5 billion for education, and $16.9 billion for welfare—a total of $39.7 billion.

† Merriam, Ida C. Social Welfare in the United States, 1956-1957. Social Security Bull. 21, 10:28 (Oct.), 1958.

With a growing and aging population, and the demand for more and better medical services, these expenditures will continue to increase. Medical expenditures are increasing approximately a half billion dollars annually. It will not be many years, at the present rate, until medical expenditures exceed $25 billion annually.

Insuring the costs of medical care has tended to increase expenditures for two reasons: (1) by eliminating the financial barrier to medical care and (2) by adding the overhead costs of providing the voluntary insurance protection. As voluntary insurance coverage continues to increase, these two factors will continue to operate unless there are economic or social changes in the provision of medical care which are not now visible.

Twenty-five years ago the use of the insurance method was a controversial issue in medical care. This is no longer true. Today, the public wholeheartedly accepts the insurance principle, as do the hospitals and, to some extent, the physicians. Every effort is being made to extend it on a voluntary basis and to expand it to cover a larger proportion of people and a larger proportion of medical costs. Nevertheless, a substantial proportion of low-income persons and high-cost services are still excluded from insurance coverage. It is doubtful whether existing voluntary arrangements can or should cover these areas completely. While the exact character and extent of financing from public funds is a controversial issue when approached from the standpoint of "principle," the most likely new approach to the problem may develop pragmatically as a result of the special health needs and costs of the aged.

Philanthropic Contributions

Now let us look more intensively at the area of philanthropic contributions. Total religious and philanthropic contributions were $5.9 billion in 1955, or 1.5 per cent of the gross national product. In 1929 they were 1.2 per cent, while in 1930 and 1947 they reached 1.6 per cent.* If we assume a gross national product of $707 billion for 1967 (based on a 5 per cent growth rate) and assume that 1.6 per cent will be contributed from all philanthropic sources, then a total of $11.3 billion would be available—or nearly twice that of 1955.

There is no question that this amount could be used. There are many social welfare needs which are not being fulfilled for which voluntary agencies are suitable. Is it possible to raise this much money through existing arrangements?

The Rockefeller Report points out:

> Charitable contributions by individuals have risen to unprecedented levels. In addition, a fairly recent development in private philanthropy is the increase in corporate giving for educational and general welfare purposes. . . . We should give every impetus to accelerating the upward trend of corporate giving in the next decade.†

What effect a significant shift from individual to corporate giving will have on our voluntary institutions and agencies merits very careful reflection and review.

Philanthropic contributions for health and welfare purposes (omitting educational and strictly religious purposes) represent about $2 billion of around $20 billion of all private health and welfare expenditures, or approximately 10 per cent of the total. While the amount expended for philanthropic contributions has increased fivefold from about $400 million in 1930 to $2 billion in 1955, the proportion of the gross national product has increased from about four-tenths to about five-tenths of 1 per cent—about 25 per cent. If about five-tenths of 1

* Karter, Thomas. Voluntary Agency Expenditures for Health and Welfare from Philanthropic Contributions, 1930-1955. Social Security Bull. 21, 2:14 (Feb.), 1958.

† Ibid., p. 51.

per cent of a gross national product of $707 billion were raised from philanthropic contributions for health and welfare purposes, the total would be about $3.5 billion annually—a 50 per cent increase over 1955.

It thus appears that philanthropic contributions are likely to be even a smaller share of total social welfare expenditures in the future unless there are some changes in our tax laws or sources of contributions, or an increase in philanthropy, as incomes rise.

Total Social Welfare Expenditures for 1967

To present over-all projects for all social welfare expenditures,* public and private, for a decade ahead is a perilous attempt and most likely to be wrong in retrospect. But it will give us a provocative target to shoot at.

In order to fill existing gaps and to meet the needs created by the explosive population growth ahead a substantial dollar increase in expenditures for health, education and welfare will be required. Some of the additional funds will come directly from the consumer (for medical care), some from private sources (private pension, health and welfare funds, and philanthropy), and a major proportion from public sources (for education, health services, and Social Security). If our gross national product grows at 3 per cent per year, it will be about $583 billion in 1967, in which case expenditures of $90 billion—about $30 billion more than at present—would come to about 15 per cent of the gross national product. With a gross national product growing at 4 per cent annually, we could reach a total product of $642 billion, which would make the total expenditure of $90 billion about 14 per cent—the same as today. The Rockefeller Report indicates a needed increase of $30-$42 billion in public expenditures alone. If our gross national product increases at a 5 per cent annual rate to $707 billion in 1967, we could increase present social welfare expenditures from $60 billion to $100 billion without increasing the proportion of the gross national product allocated for this purpose.

Assuming that this goal is an attainable objective from an economic point of view, the major policy question is how can we proceed to develop more effectively and more promptly the necessary social and fiscal policies and modifications of existing arrangements which will make it possible to reach this objective in an evolutionary manner consistent with other national goals and values, taking into account such policies as maximum individual choices, community responsibility for social needs, the role of voluntary agencies, and changes in tax policy?

Several devices come to mind: expansion of the social insurance principle; broadening of services; extension of research, demonstration projects, and training of personnel; and more effective use of the grant-in-aid system.

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* There are a number of points at which it is difficult to determine what should be included in "social welfare expenditures." Recreational expenditures and programs, for instance, are not included in the total. But, from the point of view of competing pressures on public, private, and consumer funds, and the relationship to mental health and prevention of delinquency, recreation might appropriately have been included. Consumer expenditures, as defined by the Department of Commerce in its national income studies, were $13 billion in 1955. Public expenditures were $715 million. (Karter, Thomas. The Development of Organized Recreation in the United States. Social Security Bull. 20, 5:8 (May), 1957.) A total annual figure of $40 billion can be supported if a broad definition is used. (Dewhurst. Op. cit., p. 348.)

Increasingly, attention will have to be given as to the relationship between policies and expenditures for recreation and those for health, education, and welfare. The need for recreational facilities in educational settings, the question of recreational programs in relation to juvenile delinquency, and the role of public and voluntary agency responsibilities in recreation all indicate the many social policy questions involved.

Strengthening the Federal-State Cooperative Programs Relating to Social Welfare

There are many aspects of public policy raised by the projections and speculations I have but briefly and incompletely outlined in this article. I have outlined my recommendations in the social welfare field in detail elsewhere.* But I cannot refrain from including one specific here, namely, the use and improvement of the federal grant-in-aid system.

Federal grants-in-aid for all purposes (including highways, airports, public health, urban renewal, and many other functions) totaled about $3.5 billion in 1956 or 1.1 per cent of personal income.† From the standpoint of the national economy, or the federal budget, they are not large but are very important. The federal-state cooperative grant-in-aid mechanism is a great social invention which has demonstrated its usefulness but which has not yet been used to its maximum potentialities.

The federal-state cooperative grant-in-aid system of health, education, and welfare, which we have developed over many years in this country, enables us to achieve essential national objectives with decentralized administrative responsibility and with wide latitude for adjustment of many details to special circumstances. We should strengthen and broaden this system—rather than weaken or dismantle it as has been suggested in some quarters.

Federal grants to the states have not weakened the states but have strengthened them and preserved the federal-state system in this country. We will not be able to meet the rapidly changing and expanding social and economic needs of our nation without building upon the federal-state system. It is not difficult for a high school sophomore to catalogue in great detail various minor criticisms and defects of the federal-state system, just as it is possible to do so with the institutions of marriage, the family, democracy, or the Congress. But it is much more important to keep the large picture in mind and to recognize that the federal-state system enables us to seek and find ways to accomplish broad and important national objectives for the conservation of our human and natural resources with decentralized administrative responsibility and wide latitude for adjustment of specific policies to varying needs and changing circumstances.

* Health, Education and Welfare Policies and Expenditures for Economic Growth and the General Welfare. In Federal Expenditure Policy for Economic Growth and Stability. Washington, D. C.: Joint Economic Committee, 85th Congress, November 5, 1957, pp. 919-955.

† Dales, Sophie R. Federal Grants to State and Local Governments, 1955-1956. Social Security Bull. 20, 6:11 (June), 1957, pp. 11-15.

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Within the community framework, welfare needs are dealt with by public and voluntary agencies. What can and should be the relations between such organizations? The thoughtful comments by the well known author of the following paper merit careful consideration by all community health workers.

RELATIONSHIPS BETWEEN PUBLIC AND VOLUNTARY HEALTH AND WELFARE AGENCIES— PHILOSOPHY AND PRINCIPLES

Leonard W. Mayo, S.Sc.D.

DURING the last fifteen years there has been a dearth of papers and articles on the relationships between public and voluntary agencies. The same period witnessed not only a substantial extension of social services under both public and voluntary auspices, but a widening of social work boundaries, an improvement in skills, and an enrichment of philosophy. In the light of these developments it is well that we are again giving attention to the practical working relations between governmental services and those under voluntary direction.

In the 1930's, and earlier, we spoke of "public versus private"; today the common expression is "public and voluntary." The change from "versus" to "and" seems to signify improvement in the underlying relationship, and the shift from "private" to "voluntary" is not only a move in the direction of clarity, but a recognition of the fact that no welfare function performed as a community service can be regarded as "private" in the sense that it is the exclusive business of any one individual or group.

The auspices of a welfare agency* may be nongovernmental, but the function it performs and the manner in which it performs are matters of public concern and responsibility. Not only can the state require that certain minimum standards be met, but a voluntary agency cannot operate without state sanction. In brief, therefore, all welfare services either have been created by the government as its own instruments for the administration of welfare and health services or have been sanctioned by it through established legal procedure.

Thus, the entire complex or network of welfare services in the United States is a unique public and voluntary combination, the latter including both sectarian and nonsectarian services. There are differences, to be sure, in their origin, specific mandates, and structure; but they have the same long-range purposes. Although ultimate powers in relation to both are in the hands of gov-

* The terms "welfare organization," "agency," or "services" as used here and throughout this article include health agencies.

ernment, private citizens are morally responsible for the conduct and quality of all community welfare services.

It is still a widely held view that governmental welfare agencies are confined to a framework that is far more limiting than that of the voluntary group. If one examines the statutes establishing a city or county department of public health or welfare, however, it will be noted that their scope is broader than that provided by the charters of the local voluntary agencies. As for flexibility within a given framework or with reference to changing the framework itself, it is frequently difficult for a governmental agency to move promptly; but it is also difficult to induce the boards of voluntary agencies and even some professional staffs to change their charters, not to mention their programs.

The general assumption persists, however, that the voluntary agency has the edge in flexibility, innovation, exploration, and research. Hence we need to look at the current situation closely to judge whether in fact the advantage in these respects is all on the side of the voluntary group. A rough comparison between a nonsectarian family service agency and a department of public welfare in the same town or county on the basis of purpose, mandate and function, scope and freedom of operation, size of case load, quality of service, and competence of administration and personnel may serve to highlight similarities and differences and set the stage for a discussion of a proper sharing of functions.

1. The purpose of each is to assist families, single persons, and children who require certain social services.

2. The mandate of the public agency is to provide service for all who qualify under the law; that of the voluntary agency is to accept those who are eligible under the intake policies established by its board.

If the public agency is not the sole arbiter in the establishment of its intake policies, the fault is not entirely its own. The fact is that in many urban communities the voluntary family agency accepts for service only those who can apparently profit by "treatment," leaving the function of providing basic economic assistance very largely to the public department. Thus, in a sense and to a degree, the intake policy of the public agency within the framework provided by the law is influenced, if not determined, by the voluntary agency.

The number of families in need at any one time in a community constitutes a problem that the voluntary agency frequently cannot meet. This was at no time more evident than during the depression of the 1930's when the impact on the voluntary agency was too great to be borne. Thus common sense immediately suggests a logical allocation of certain functions. Mutuality rather than any rigid formula is the key in such allocation. Experience has revealed the unhappy consequences that result when the policies of either a public or voluntary agency are determined by the unilateral or arbitrary action of the other. To some extent this occurs when a voluntary agency arbitrarily closes intake, or when a public agency fails to fulfill some aspect of its legal and agreed upon functions.

3. Granted that a major responsibility of departments of public welfare is to establish an "economic floor" for the benefit of the majority of needy families in the community, it does not necessarily follow that this is their sole function, or that they should not have the assistance of voluntary agencies in carrying it out.

Should we be content with the sharp distinction frequently made between "treatment" and "relief" and the allocation of the former more or less routinely to voluntary agencies and the latter to the governmental organizations? In the past this practice has tended to lower the quality of the rank-and-file staff in governmental agencies and—even more

important—it implies that the fundamental needs of those who are served by one agency are essentially different from those who are served by the other. This is not necessarily true.

Some people who are ill, for example, go first to a private physician, others to a public clinic, still others directly to a hospital. All of them are ill, however, and each should receive medical care in accordance with his needs no matter where he applies. By the same token, it should make very little difference whether a father first reveals the troubled state of his family when an economic crisis brings him to a department of public welfare or whether it is made known through the emotionally disturbed mother's application for help at a voluntary agency. The manifestations of problems are there and no matter where the mother or father applies they deserve the best available diagnostic and treatment services, either directly or by referral.

4. In most cases both public and voluntary agencies seem to have freedom of operation commensurate with their responsibilities; if and when responsibility changes in kind or degree owing to changes in need, it is possible, though admittedly sometimes difficult, to obtain the necessary modifications. The problem is not so much one of inadequate scope as lack of willingness or ability on the part of either type of agency to function fully and adequately within the scope provided. In the final analysis every agency, no matter what its auspices, is very largely a reflection of those who determine its policies and conduct it; hence the degree of flexibility and forward motion it exhibits is determined more by the board (or legislature) and the administrative staff than by the structure or auspices of the agency per se. A limited amount of flexibility used wisely and creatively is a more powerful factor in inducing change than an unlimited amount used timidly or not at all.

5. The case load is almost always higher in the governmental agency, owing in part to the requirement that it must accept all applicants who qualify under the law, whereas no such requirement exists for the voluntary agency. The governmental agency is usually equipped budgetwise to handle a larger volume of work, particularly in public assistance.

6. Without the benefit of detailed comparative studies very little can be said about the quality of service provided, respectively, by departments of public welfare and voluntary family agencies. Quality is always related to function and work load and depends on the adequacy and competence of administration and staff—once again a matter more dependent on people than on structure or auspices. This brings us to the final point in the brief comparison between a department of public welfare and a voluntary family agency.

7. Twenty-five years ago it is probable that the administration of voluntary agencies was in more skillful and experienced hands than that of the public agencies. The depression and subsequent events changed this picture. Some of the ablest and best qualified men and women in social work are to be found today in the administrative posts of local, state, and federal welfare agencies.

In both public and voluntary agencies broad policies are established by, and policy control lies in the hands of, a duly appointed or elected governing group, i.e., a legislative body or a private board. In either case such a body is as good as the citizens of a community will aspire to or as poor as they will tolerate. Legislatures may be either reactionary or progressive, and the self-perpetuating boards of voluntary agencies also vary widely in their sense of responsibility and in their courage in carrying out its implications. Both hold extensive power in their hands, affecting the welfare of large numbers of people.

8. It might be argued quite logically

that the most skillful staff should be employed by the agency (either public or voluntary) that deals with the greatest number of "repeater" families; frequently this is the department of public welfare. It could as validly be argued that the most skillful staff should be employed where there is the greatest opportunity for prevention; presumably this would be the voluntary agency, for many families are seen by private agencies when the signs of breakdown first appear. Thus we are left with the conclusion that both governmental and voluntary agencies require a fully qualified staff in order that the character and extent of the problems presented to each may be detected and understood and appropriate referral or treatment carried out.

On balance, how do the hypothetical department of public welfare and the voluntary family service organizations compare? In long-range purpose, in basic function, in freedom of operation commensurate with responsibility, in competence of administration, in general adequacy for the tasks that each faces, one sees few differences of great importance. In degree of flexibility (particularly in intake and related matters), in proportion of highly qualified staff, and in freedom to "crusade" in the community the voluntary agency frequently has the edge; whether it uses these advantages to the utmost is another question.

The objectives of any professional group are an expression of the values they live by. Governmental and voluntary welfare agencies believe in total coverage of the welfare needs of the community with the well coordinated services of high quality, and they work toward the organization and conduct of programs designed to prevent family breakdown, juvenile delinquency, and physical and mental illness. The attainment of these objectives requires not only a full and continuing cooperation of lay and professional groups, but a high degree of effective communication, cooperation, and collaboration among governmental and voluntary agencies.

Why is it that greater progress in this direction has not been made? We attain a high degree of cooperative effort during wars and depressions, but it still remains for us to meet the full challenge of such a manifestation of decay as juvenile delinquency, which no one or two agencies can possibly meet alone, and to sustain a high level of cooperation when no crises threaten.

In the past the traditionally condescending attitude of the voluntary toward the public agency militated against close cooperative endeavor and joint action. This attitude has changed markedly for the better since the depression of the 1930's, but there is still discernible a trace of condescension and superiority; note, for example, the type and vehemence of the criticisms leveled by voluntary agencies against the public programs. There is value in open and free criticism when it is possible for those under fire to play the game on equal terms. But this is not always possible for a governmental agency when it finds itself under fire, for frequently it dares not respond for reasons of strategy and public relations. For the same reasons it is rare for a public agency to be openly critical of a voluntary group.

A good number of communities have established and maintain a mutual respect that engenders cooperative endeavor between governmental and voluntary services. By and large these are communities in which social and health services are reasonably adequate, the citizen leadership is superior, and community morale is high. One cannot prove a cause-and-effect relationship in such communities, but certainly these two sets of conditions appear to go hand in hand.

The relations between voluntary and public agencies may well be aided by a

clearer understanding of the nature of the relationship itself. We habitually speak of a "division of responsibility." But all agencies of similar function, both public and voluntary, have common objectives, responsibilities, and obligations, and these should be shared, not divided. The difference is far more important than may appear on the surface.

There is a true division of responsibility, for example, between the Chamber of Commerce and the Community Fund in a given community; but between a department of health and a voluntary health agency, and between a department of welfare and a voluntary child welfare or family agency, there is common cause that calls for a sharing rather than a division of responsibility and for a partnership relation within which a sound division of administrative function and an appropriate allocation of specific tasks may be worked out.

The key question, then, is whether there are criteria to guide us in this process. Two simple and familiar criteria immediately offer themselves:

1. Public agencies are usually better equipped from the point of view of facilities and finances to deal with large numbers of people and to provide the major service in economic assistance.

2. Voluntary agencies have an inherent flexibility that allows them more readily to engage in preventive work and the treatment of emotional problems, to fill in the gaps, to change policies, and to "free wheel" to a degree not usually possible for the public agency.

More important than such criteria, however, is the probability that the sum total of the functions, programs, and powers of public and voluntary agencies taken as a whole and flexibly combined could provide far better coverage and a higher quality of service than currently prevail in most communities.

Regrettably, or perhaps fortunately, there is no reliable formula for making an effective whole out of these parts. Who of us would be willing to say what specific functions should be performed by the departments of public welfare in Los Angeles, in Ann Arbor, in the State of Wyoming, or in a county in Georgia? These are decisions to be worked out in each locality on the basis of the variety and volume of need, the competence of each type of agency to meet them, and the total health and welfare structure and resources of the community. These factors rather than the traditional and orthodox functions routinely ascribed to the governmental and the voluntary agency should be the controlling ones.

This approach places an additional and highly important responsibility on local councils and similar planning bodies, for it is through the planning process that major decisions of this character, or recommendations leading to them, should be made. The welfare and planning council movement in this country is an old one and, to judge by the degree of cooperation and planning that exists, it has made an impact on many communities. However, an objective appraisal of the council programs throughout the United States at this time would not, I am convinced, fill us with pride or convince us that the millennium had arrived. Perhaps we have placed too much faith in structure and not enough in the process of planning itself; perhaps we have adhered too long to certain established patterns of planning instead of improvising methods to suit specific situations. Perhaps the lip service we have given to planning has deterred us from objectively analyzing it.

In any event we know that no structure, no staff of community organization experts, and no constellation of committees will do for us what each of us as individuals and agencies must do for ourselves. Similar to the United Nations, a council of social agencies cannot force its members to change; it can serve only as a medium through which those who are willing to change and to sub-

ordinate individual interests to the demands and requirements of the common good can work together.

We have the machinery—and in many communities the funds and the staff—for an effective coordinating and planning operation, but we have not used them to the full. We are like the stout lady who said that her doctor had given her a wonderful diet and that she hoped to try it some day. Soul-searching—both public and private—is still very much in order. And so is the use of a greater proportion of public funds for local, state, regional, and national planning.

We need a good number of able public welfare officials and knowledgeable laymen in the planning function. Professional staffs have the technical "know-how" and the philosophy, but informed laymen are best equipped to lay the groundwork and to make telling and persuasive presentations at key points and at strategic moments.

In sum, the key to more effective relations between governmental and voluntary agencies lies first in a recognition of their common goals; second, in the conviction that there is nothing sacred in the separate and different functions traditionally assigned to each; third, in the realization that neither agency has a lien on flexibility, experimentation, or research; and finally in the belief that each has an obligation to be of maximum help to the other in the fulfillment of their respective and joint functions. The demands of the future point clearly to the necessity for closer working relations between these two major forces in the community and to the need for skill and for diplomacy in the creation and continuing development of such relations.

As one thinks of the sum total of human needs in the community as a whole, and of both public and voluntary agencies mobilizing their forces to meet them, cooperative endeavor emerges as more vital than any division of responsibility, and joint planning takes precedence over a rigid allocation of function. It is in this context that we may find, in the next decade, the road to "a more perfect union" of governmental and voluntary agencies in social welfare.

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This article is a revision of a paper presented at the National Conference on Social Welfare, May 12, 1958.

The creation of a new health code for a great metropolitan center is a matter of public health significance. How this was accomplished and what results were achieved are presented here in an instructive report.

A NEW HEALTH CODE FOR NEW YORK CITY

Leona Baumgartner, M.D., F.A.P.H.A., and Frank P. Grad, LL.B.

LAWS REGULATING sanitary conditions can be traced to antiquity. They apparently first appeared as people who lived in cities recognized the need for a common and unpolluted water supply. Archeological studies of early civilizations in northern India and Egypt, for example, give evidence of carefully and uniformly built drains and water supplies. Ancient Troy arranged for the disposal of wastes, as did the medieval cities, long after the hygienic glories of the Greco-Roman world. The epidemics of the Middle Ages and the growth of cities with the coming of the Industrial Revolution gave new impetus to a wide variety of communal regulations designed to protect the citizenry. The powers given the bodies responsible for health matters reflected the fear of plagues and the common acceptance of a need to regulate matters influencing the public health.

The New York City Sanitary Survey of 1864 leading to the enactment of the Metropolitan Health Bill of 1866 marked a turning point in public health in the United States.[1] At the same time the survey of sanitary conditions was made by a citizens group, another group of volunteers formed a Council of Law, and under the direction of a lawyer, Dorman B. Eaton, drafted a public health law. The basic structure of the Department of Health, the Board of Health, and the public health laws of the City of New York today are based upon these important activities initiated in the 1860's.

On March 23, 1959, the Board of Health of the City of New York adopted the New York City Health Code. This code constitutes a complete revision of the former Sanitary Code of the City of New York. Over 325 pages long and thoroughly annotated, the new code attempts to embody the most modern concepts and policies of public health practice and law. The authors of this article, both of whom have been closely connected with the preparation of this new code,[2] believe that an account of the origin, background and work of the revision, as well as of the contents of this most recently adopted metropolitan health code, is of general interest to the public health profession.

Background

The Sanitary Code of the City of New York was last revised in 1914 and has since been amended on literally hundreds of occasions. After 40 years and in spite of frequent amendments, the code, in the opinion of administrators as well as of the Board of Health, no longer kept pace with the need for a legal document capable of reflecting changing modes of city living and recent developments in technology, sanitary science,

and medicine. The Board of Health undertook to investigate the possibility of a complete substantive revision of the code. New York City had for many years been a leader in the field of public health regulation, with large parts of its Sanitary Code serving as a model for other states and localities. It was the intention of the Board of Health, in furthering a revision of the old Sanitary Code, to reassert New York City's position of leadership. The decision to revise the Sanitary Code was taken in 1954. Next followed a search for necessary funds; $100,000 of state and city funds[3] were ultimately made available for the project, and the Rockefeller Brothers Fund and the Kellogg Foundation together contributed the balance necessary to provide the $160,000 for the three-and-a-half-year project.

A contract was entered into between the City of New York and the Trustees of Columbia University on September 8, 1955, under which the Legislative Drafting Research Fund of Columbia University[4] was to supply the legal staff for the revision of the code. Under the terms of the contract, all policy directions required for the revision would be furnished by the Board or the Department of Health, while the Legislative Drafting Research Fund was to provide technical legal research and drafting aid. The object of the project was stated by contract to be "a comprehensive revision of the Sanitary Code . . . to insure that the code . . . (1) will reflect the best thought and recent advances in the field of public health, and (2) will be a compact up-to-date body of law conveniently arranged to meet the needs of public health personnel and other groups affected."

The Sanitary Code—Legal Background

Before discussing the preparation, contents, and innovations of the code, it may be useful to put the Sanitary Code of the City of New York—renamed "New York City Health Code"—into its proper legal setting. Brief reference to the powers of the Board of Health, particularly in relation to the enactment of a sanitary code will have to be made.

The charter of the City of New York provides for a Board of Health within the Department of Health, to consist of the commissioner of health as chairman and of four other members, of whom two must be doctors of medicine with ten years' experience in clinical medicine, public health administration, or public health teaching. The commissioner of health must also be a person with a degree in medicine or public health with at least eight years of public health experience. The four members are appointed by the mayor for staggered eight-year terms with vacancies to be filled for the unexpired terms. Members of the Board of Health are not paid, performing their function solely as a public service.[5] Under the city charter, the Board of Health may enact, alter, amend, or repeal any part of the Sanitary Code and "may therein publish additional provisions for the security of life and health for the city and confer additional powers on the department not inconsistent with the constitution or laws of the State or with this charter. . . ." The charter authorizes the Board of Health to include in the code "all matters and subjects to which the power and authority of the Department extends, not limiting their application to the subject of health only."[6] Violations of the Sanitary Code may be punished as misdemeanors by fines up to $500 and by imprisonment up to one year, and civil actions for the recovery of pecuniary penalties are authorized.[7] Except in so far as Sanitary Code provisions may be inconsistent with the constitution and laws of the state, the Board of Health of the City of New York constitutes the final legislative authority in matters of health affecting the city—moreover, its

authority is not limited to matters of health alone but extends to all matters and subjects to which the power and authority of the department extends, whether or not strictly limited to matters of health. This unusually broad legislative power has withstood frequent attacks in the courts, with case after case holding that the board's power to enact a sanitary code, granted by the state through the city charter, is a time-honored exception to the ordinary rule that legislative authority may not be delegated.[8]

The pattern of health legislation for New York City is thus somewhat atypical. In many municipalities the promulgation of a health code is essentially the job of the City Council, with health regulations subject to the governing provisions of the code relegated to the Board of Health. In other municipalities the health code is enacted by the Board of Health subject to further approval by a City Council, with regulations promulgated administratively by the health commissioner. Many variations of these patterns may be found. In New York City the power of the commissioner to issue regulations under the code on his own has never been exercised and is not established under the city charter. On the contrary, the Board of Health has traditionally enacted both code provisions and regulations. But in view of the fact that under the city charter both code provisions and regulations had to be enacted in exactly the same manner, the original distinction between code provisions to cover matters of public health principles and regulations covering matters of day-to-day administration gradually became lost. The old Sanitary Code, which continues in effect until the October 1, 1959, effective date of the new Health Code, perpetuated this obsolete distinction between code provisions and regulations. The distinction is abolished in the new Health Code because, in the opinion of many public health practitioners, it is practically untenable in any event.

The Board of Health of the City of New York must be viewed as, in effect, a small legislature with broad powers in matters concerning or relating to the public health. In view of the fact that the city charter does not grant the health commissioner any power to promulgate regulations of general applicability (i.e., other than for the internal management of the department), the code itself must be sufficiently explicit to allow proper public health administration and yet must be sufficiently flexible to avoid the necessity of constant amendment with each minor change in public health practice.

The Work of the Revisers

The revision of the code took three and one-half years. Its budget cost was $160,000, but if the time of Health Department personnel and other indirect expenses are included, the total was much more. Because the code covers such a broad area, the revision involved not only legal complexities but also interdisciplinary consultation and cooperation with experts in such fields as medicine, sanitary engineering, food sanitation, child care, social work, vital statistics, and many others. The revision staff itself consisted of five lawyers and two secretaries; the project was helped immeasurably by the fact that the persons initially hired for the project remained with it for the entire duration of the work.

In the initial stage of the project the revision group searched out, read, briefed, and indexed every legal case report bearing on the old Sanitary Code. Considerable legal research was done on the legislative powers of the board and on the powers of the Department of Health. Special research was necessary in the complex legal area of consistency of the code with federal and state law.

The initial legal research stage of the project took more than half a year. Then followed an organization stage of the revision, during which a detailed 50-page outline for the new code was prepared, which served as a blueprint for the revision.

Thereafter, for the next three years, special areas of regulation were taken up one by one. The area of the control of communicable disease was taken up first. The same procedure was followed in the development of each of the segments of the code. The first draft of each segment was usually prepared under policy instructions from the operating unit in the department charged with the enforcement of the particular area of regulation involved. The process of crystallizing policy took many hours of conference with the operating unit concerned. An old truth was soon rediscovered—it is one thing to know that a particular area of the code needs revision and quite another to determine precisely what the revision ought to achieve. The development of policy instructions frequently involved a detailed analysis of the shortcomings of the existing sections of the code and thorough consideration of current department practices. Only then was it possible to decide which current practices were adequate and were adequately reflected in the existing code, and which practices needed improvement with the help of new law. Dozens of drafting conferences were often necessary to determine precisely what was to be done in particular areas. Conferences often had to be held with more than one operating unit and with officials of other state and city departments as well. When policy had sufficiently crystallized, the drafting staff would prepare a first draft for circulation solely within the department. Only when the operating unit which had rendered the initial policy instructions was satisfied with the first draft was a second draft prepared for initial submission to the Board of Health.

The board's initial consideration of the draft was merely to determine whether the draft was sufficiently advanced and sufficiently reasonable and representative of modern thinking to allow its dissemination outside the department for comment, criticism, and suggestions. When the board had granted permission to have the draft disseminated in this manner, depending on the area of public health covered, from 200 to 1,200 mimeographed copies of the draft would be sent out under a covering letter signed by the commissioner of health, as chairman of the board, to all persons who could claim to be experts in the particular field, to industrial firms and others affected by the proposed regulations, to public and private groups interested in particular phases of public health, to trade and civic groups, to federal, state, and local agencies throughout the state and the United States, to faculty members of schools of public health—in brief, to all persons who could reasonably be expected to make some contribution to the consideration of the specific area.

Many persons in government, in industry, in medicine, in the sciences, and in universities gave freely of their time and special competence, writing detailed comments on drafts and contributing their suggestions for improvement. Particular credit is due the Public Health Committee of the New York Academy of Medicine. This group, through several subcommittees, studied in great detail each section of the code, thus bringing advice from top leaders in the medical field to bear on the revision.

All of the comments received were carefully examined and indexed. The comments were ultimately presented to the Board of Health and were thoroughly considered before the revisers received instructions for the preparation of final drafts.

When no further comments were received, the board would meet with the commissioner's staff and with the re-

visers in executive session. In these informal work sessions the ultimate form of the code was hammered out. The board had before it the second draft, the revisers' detailed notes, the comments, criticisms, and suggestions from department personnel, as well as the comments from experts in the particular field who had responded to the request for consideration of the draft. It was during these meetings that drafts were discussed line by line, and sometimes word by word. The comments of experts in the field were weighed by the members of the board, and differences of attitude and opinion had to be resolved between the members of the board. Members of the operating unit concerned with the particular subject under discussion were present during these meetings and offered comments and suggestions and gave the board their first-hand impression for the necessity of particular amendments or the usefulness of changes. On the basis of policy instructions received from the Board of Health during working meetings of this kind, a third draft was prepared by the revisers. This third draft was then presented to the Board of Health for "adoption in principle." This was a device created for the purposes of the revision; it was used to indicate that a particular draft had received the approval of the Board of Health and could be put aside until revision of the entire code would be completed. At that point the drafts of the separate segments of the code were put together in proper integrated sequence in accordance with the outline previously developed.

Drafts which had been adopted in principle, usually third drafts, were not again recirculated for general discussion but for informational purposes, as a sign of appreciation and to get the benefit of further important comments, the department did send copies of the drafts which had been adopted in principle to all those persons who had taken the time and trouble to comment on the earlier second draft. The result of this recirculation, of course, was to submit the draft adopted in principle to the persons who had been most involved in the particular area of discussion—trade organizations affected with an interest in an area under discussion, for instance, could be counted on to comment on the second draft; they would, in consequence, receive the third draft for another look. Also, experts in the field of public health who commented on the second draft would receive the third draft. If they felt in complete disagreement with any of the third draft's revisions, they would thus have another opportunity to let the Board of Health know of their criticisms. Thus, some important changes were made when the board decided to re-think earlier decisions even after adoption in principle and prior to final enactment; discussion of none of the areas covered in the code was foreclosed at any time prior to final enactment.

Aside from the obvious usefulness of the comments and criticisms on the drafts by outside experts and interested persons, the distribution of drafts with requests for comments was a valuable process in and of itself, stimulating new thinking in the field of public health and educating a considerable segment of the public on the aims and efforts of their health department, as well as on the purposes of and necessity for specific health laws. Some groups which had for years been regulated by these laws said they had never understood the reasons for them. Some switched from opposing certain requirements to supporting even stricter requirements. Obviously, the time spent in conferring with all groups will be a help in effective enforcement.

The revision not only provided an opportunity for the reexamination of public health concepts, but it also gave the participants a new awareness of the role of law in public health and of the possibilities and limitations of legal proce-

dures in achieving a healthier, sounder environment. This is emphasized in the very name of the new code itself, which was changed from Sanitary Code to Health Code. The change is intended to mark the development from mere sanitary regulations of an earlier age to broader, more positive emphasis on regulations for better health.

The Organization and Form of the New York City Health Code

The revised code is new in form as well as in content. The new code is fully annotated, with general notes preceding each major segment and with detailed reviser's notes following each section. These notes specify in detail the changes from the old code, provide legal citations useful in the interpretation of the law, and in many instances supply the public health objective in requirements. The notes had accompanied each of the drafts when they were distributed for comments, and were before the Board of Health when the code was enacted. Thus the notes form part of the "legislative history" of the new code, and may be relied on in its interpretation.

Instead of the arbitrary alphabetical arrangement of subject matter followed in the old Sanitary Code and in so many health codes across the country, the new code follows a logical arrangement dividing the law into five major titles which are descriptive of the major public health activities. In arriving at the outline of the new code, numerous textbooks on public health were considered as well as the codes of the 30 major cities of the United States, so as to arrive at a logical breakdown of the code to reflect the area of public health regulated by as large and complex a department as the Department of Health of the City of New York.

Title I covers general provisions such as short title, definitions, the general powers of the department, and provisions concerning permits and registrations. It is the most thoroughly annotated portion of the code. It contains the major bulk of legal annotations concerned with such matters as inspection, the right of the department to abate nuisances, and to embargo, seize, and condemn adulterated food and other items of a contraband nature. The Health Code, in a very real sense, impinges on the lives and liberties of citizens. Hardly any other law deals with as many aspects of everyday living and few other laws bring the citizen into such constant contact with his government. Consequently, the powers of the department must be properly circumscribed so as to provide ample authority to protect the health of the city without undue limitation on the right of citizens to go about their daily business free from official interference.[9]

Responsible administration of public health under a modern code must reflect not only the most recent scientific advances but must also reflect current attitudes of law and the protection of the liberties of the citizen.

On a different level, Title I afforded the revisers an opportunity to consolidate numerous provisions which had previously been scattered throughout the old Sanitary Code. So, for instance, the new code contains but one provision governing department inspections, while in the old Sanitary Code the department's power to inspect was repeated in more than a score of provisions providing separately for the inspection of each different establishment or activity subject to supervision by the department.[10] Redundancy was avoided in this manner, and department policy in regard to many of the regulated activities could be unified and rationalized.

Continuing with the substantive provisions of the code, Title II generally covers the prevention of disease and contains articles dealing with reportable diseases, with the regulation of clinical laboratories, handling of live pathogenic

organisms in laboratories elsewhere, the regulation of blood and plasma banks and the administration of blood donations and transfusions, and with the subject of artificial human insemination.

Title III, entitled "Maternal, Infant, Child, and School Health Services," contains articles on maternity and newborn services and maternity hospitals, on nurse midwifery, on day care services, school health and children's institutions, and on family day care. This title is concerned not only with physical health and safety of the children but also contains provisions regarding their care and well-being in a broader sense.

Title IV, covering the vast area of environmental sanitation, is subdivided into two parts: Part A deals with the broad area of food, drugs, devices, and cosmetics, and Part B deals with the control of the environment generally. The part on food, drugs, devices, and cosmetics contains provisions on food sanitation, food handling, and food establishments as well as the New York City version of the Pure Food and Drug Law. Specific articles cover such areas as restaurants and other eating places, and the regulation of specific industries concerned with the production, storage, and with wholesaling and retailing of food or specific food products such as milk and frozen desserts, fish, shellfish, sausage and other meat products, and many others. Many new attitudes and approaches are reflected in these provisions which will be referred to further on.

Part B of Title IV, which deals with the control of the environment generally, contains articles on buildings and commercial premises, on transportation facilities, on drinking water, disposal of sewage, and water pollution control. Such areas as the control of rodents, insects, and other pests, and the general area of disposal of refuse are covered. Specific establishments such as pet shops and other places where animals are kept, barber shops, beauty parlors, bathing establishments, and such activities as fumigation and extermination are also regulated. The part also contains two entirely new articles on hazardous substances in use in households and elsewhere, and on radiological hazards. More will be said about these further on.

Title V deals with the important area of vital statistics and contains the provisions on the reporting of births, deaths, and fetal deaths, as well as provisions on burial and cremation. The title also contains general provisions on the correction of vital statistics records.

Throughout the code an effort has been made to relate the different portions of the code to each other by cross-reference in the code itself, and in the reviser's notes, indexes, and tables.

Some General Policy Considerations

Implicit in the new code are several major policy decisions of the Board of Health. First, the code clearly indicates the board's desire to legislate only where a demonstrable need for legislation exists. The mere fact that particular enterprises or activities were subject to regulation at an earlier time was rejected as a basis for regulation in the new Health Code. All too often health codes contain provisions which are mere remnants of an earlier age and no longer fulfill real need under present conditions. While everybody will readily agree that no law-making body should legislate unnecessarily, the pruning of dead wood nevertheless runs into much opposition. Health code requirements frequently have become the center for clusters of economic or trade practices in regulated occupations or industries. Even though the public health need for a particular requirement may long have disappeared, it often happens that members of the regulated trade or industry, or even labor engaged in the particular trade or industry, will resist a change, not

because of any real belief in the need of a requirement for the protection of public health, but rather because of economic considerations of stability in the industry, established trade practices, and the like. Today's provision for the protection of public health may become tomorrow's economic regulation or restriction. Thus, unwillingly, through the passage of time, the Department of Health frequently finds itself the guardian of certain economic practices which at one time were conditioned by specific requirements of the public health. Understandably, an attempt to abolish some of these outmoded provisions will often result in protest that the Board of Health is meddling in economic affairs, while, in fact, it is trying only to withdraw from an area where its legislation is no longer necessary. One or two examples will suffice: Persons already established in a particular trade will resist a change lowering requirements for physical facilities because it may enable newcomers to get into the business and compete with them more economically. Changes in the permit structure of a particular trade may be opposed, even though less rigid, because such changes may upset the existence of whole apprenticeship systems or whole sets of practices in labor-management relations.

The general problem of standard setting also occupied the Board of Health. Should a modern health code set extremely rigid standards to be met by one form of compliance only, or should it rather set broad performance standards, leaving the manner of compliance to the person or trade to whom the requirement is addressed, or subject to the ultimate discretion of the department? The code gives no single answer to this question. While the new Health Code contains many more broad performance standards than did the old Sanitary Code, and while, in general, reliance on strict standards was relinquished, the code as a whole represents a flexible approach to this problem. In areas where the risks to the public health are great, and where deviations from a strict standard may be hazardous, rigid standards are relied on. In areas of lesser risk or where sanitary science has pointed the way to achieving results in several effective ways, broad performance standards have been prescribed. So, for instance, in the area of shellfish regulations the generally rigid standards applicable throughout the United States have been applied.[11] In other areas, such as for instance in certain areas of food sanitation,[12] or in the regulation of barber shops and beauty parlors,[13] broad performance standards have been relied on to a much greater extent.

The question of performance standards is, of course, closely connected with the manner in which a health code is to be enforced. To some extent, enforcement by prosecution and enforcement by administrative action are antithetical. Rigid requirements not only prevent the operator of a regulated establishment from exercising a choice, but they also prevent the department from exercising choice. Where a rigid standard is violated, the only remedies of the department are either prosecution, or revocation or suspension of license. Since license revocation, the economic death sentence, is ordinarily the last step, prosecution for violation becomes the more usual remedy.

All too frequently, the net effect of routine prosecution is the imposition of a small fine which the operator generally comes to view as a cost of doing business. Courts do not as yet view violations of health codes as serious threats to the public. Until courts do so, the present situation will undoubtedly continue. Consequently, the effectiveness of routine prosecutions may well be doubted. In the alternative, the department has the possibility of working with operators in food establishments and other industries to obtain compliance

through education and persuasion, with the ultimate threat of prosecution and permit revocation kept in the background for serious or recalcitrant offenders. When only serious cases of health code violations are taken to court, the courts will come to regard such violations more seriously, too. In the meantime, broad performance standards will provide greater opportunity for the department to work with operators in affected industries than would rigidly detailed standards of the old variety. It is true, of course, that detailed standards make it easier to win court cases on routine prosecutions. Whether or not an establishment has an eight and one-half-foot ceiling is easy to prove, while proof of the question whether or not an establishment provides adequate space to permit proper cleanliness and ready inspection is perhaps more difficult to provide. Clearly it would be easier to convict an operator under the earlier provision. Just as clearly, however, the performance standard will provide greater possibility for the department to work with the operator in helping him set up his establishment intelligently for safe and sanitary operation.

The new code has at least as much "bite" as the old one. At the same time, however, in many areas its broad performance standards, it is hoped, will encourage imaginative compliance on the part of operators, as well as sufficient leeway for new developments in science and for new technological developments in the various industries regulated by the code.

Another major policy decision which had to be made concerned the scope of subject matter in the Health Code. The temptation in drafting an entirely new document is to aim at all-inclusiveness, forgetting that a local health department, even one as large as the New York City Health Department, was never intended to do the job all on its own. Particularly in a state like New York, where both state and local law is well developed, and in the light of the broad areas of public health legislation which are covered by federal law, it is necessary for a board of health to exercise self-restraint, so as to provide for specific regulations only where federal and state law is not already sufficient to fill the need. Aside from avoiding problems of inconsistency, an ever-present legal threat where one level of law is piled on top of another, there is the very real problem of conflicting and overlapping jurisdictions. Take, for instance, the field of food and drug regulation. There is the far-reaching effect of the Federal Food, Drug and Cosmetic Act, and in addition almost all of the states have further food and drug regulations in their agriculture and markets laws, or health laws, or pharmacy laws. If at least a substantial portion of a municipality's food consumption is locally produced, local regulations are necessary. But broader problems can often be better handled on the federal or state level. One example is in the area of economic adulteration or misbranding in the food and drug field. In the new Health Code the subject of economic fraud was, as far as possible, omitted from coverage, largely in the light of existing provisions in state and federal law. Positive recognition that other laws and agencies are already in the field to deal with some of the problems was given in many of the provisions of the code as well as by many of the references contained in the reviser's notes.[14] Even a city health department with as broad powers as the Department of Health of the City of New York must share its responsibilities with other agencies and departments in the city, in the state, and in the nation at large. With the growing complexity of metropolitan life, lines can no longer be strictly drawn between the activities of a health department in the field of environmental sanitation and, say, the activities of a building department in the same area.

Moreover, some city agencies' operations, such as for instance the operations of a department of parks, of a department of water, gas, and electricity, or water pollution commissions, and of many other agencies, overlap the field of public health to a considerable extent. To give but one fairly recent example, in the field of radiological health the New York City Department of Health shares responsibility to a large extent with the state industrial commissioner, with the State Department of Health, with the Atomic Energy Commission, and with a number of other federal agencies, such as the Post Office Department, the Interstate Commerce Commission, the Civil Aeronautics Board, and others. In such instances, to the greatest extent possible, the idea of cooperation and coordinated action with other departments and agencies, local, state, and federal, was written into the code. In all of these instances, moreover, an attempt was made to try as far as possible to parallel the standards of other agencies in the field.[15]

Some Major Substantive Innovations

In Title II, "Control of Disease," some major substantive changes were made in regard to provisions dealing with reportable diseases, i.e., communicable diseases in man, and with diseases in animals which are communicable to man. Aside from the elimination of much obsolete detail in the light of recent medical progress, many of the outmoded restrictions previously imposed on persons who are affected with or who are exposed to communicable disease have been abolished. So, for instance, the provisions on quarantine and placarding of premises have been entirely eliminated.[16] The greatest restriction on contacts is now exclusion from school or work. In general, the code reflects a policy to eliminate burdensome restrictions on persons affected with communicable disease, contacts and carriers, which have no relevance today for the protection of health. The provisions on isolation and exclusion of persons affected with communicable disease and of carriers reflect a consensus of most recent medical knowledge.[17] Changes were made also in some of the reporting requirements. Under the old Sanitary Code, all reports of venereal diseases and of tuberculosis had to be kept strictly confidential and were subject to neither public inspection nor subpoena. In view of the stigma which attaches to venereal disease and the obvious discouragement to treatment which would be caused by opening up venereal disease records, this requirement of confidentiality has been maintained. In regard to tuberculosis, however, the requirement of confidentiality of records has been abolished—tuberculosis is no longer stigmatized as "the white plague."

The effectiveness of antibiotics in combating some of the old public health scourges has also been reflected in the code. In view of the fact that cases of venereal disease are readily made noncommunicable by prompt administration of antibiotic drugs in approved doses, many of the restrictive provisions on the movement and lives of persons afflicted with venereal disease have been completely deleted. Such persons are required only to undergo as promptly as possible a course of treatment with antibiotic drugs approved by the department.[18]

Other obsolete provisions which have been deleted from the code include the requirements for annual examination of food handlers and others in occupations which may affect the public health. The Board of Health took the position that annual examinations of food handlers was useless and gave a false sense of security, in that freedom from communicable disease on the day of examination affords no assurance that a food handler will remain free from disease during the remaining 364 days of the year. The newly substituted require-

ment merely provides that no person knowingly employ a food handler who is afflicted with a communicable disease.[19] This does not, of course, require a restaurant operator to retain a physician to check his employees' health, but it goes as far as possible in establishing a minimal continuing control.

New provisions in the field of communicable disease also include regulations concerning isolation in hospitals and other institutions, so as to minimize the chance of cross-contagion or infection. The new code also manifests greater refinement in regard to the description of reportable diseases. Whereas heretofore all cases of tuberculosis, without any further definition, were reportable, the report requirement now applies only to pulmonary tuberculosis and to clinically active extrapulmonary tuberculosis.[20]

The area of communicable disease control is one in which the public health and individual freedom must both be considered. Restraints on mobility and on freedom of cases and carriers of communicable disease should not be imposed unless the public health clearly calls for such restrictions. Implicit in the code is the recognition that important though remedial measures against the spread of communicable disease may be, the primary emphasis of a modern health department must be on prevention. Prevention must be guided by adequate morbidity reporting required by the code.

Title III, Maternal, Infant, Child and School Health Services, follows the same general pattern set up years ago by the very active departmental services in this important phase of public health activity. The article regulating maternity hospitals (maternity and newborn services) is, on the whole, a technical recodification of section 110 of the old Sanitary Code, which had been extensively revised as recently as 1953. At that time an important step was made—namely defining the qualifications of the chief of the obstetrical and pediatric services and certain other professionals. Actual practice was not regulated, for the board did not wish to interfere with the practice of medicine, but the responsibility of setting up requirements for consultation and restrictions on physicians was put on the qualified chief of service. This important distinction has been maintained. In the field of midwifery—although the two remaining licensed midwives will be permitted to continue their practice—no new midwives will be licensed except as "nurse midwives," i.e., registered professional nurses with special training in obstetrics. They may perform home deliveries under the supervision of qualified obstetricians associated with such institutions as Maternity Center,[21] or work in obstetrical services in hospitals.

Standards were raised, also, in the area of day care services—including day nurseries, nursery schools, and kindergartens—schools and children's institutions, both in regard to physical facilities and, in some instances, in regard to minimum professional requirements for supervisory personnel. The physical standards were raised in favor of more space per child, more light and more adequate sanitary facilities in all the kinds of institutions referred to. In the field of day care services, where the department has sole licensing responsibility, new requirements limit the maximum number of children in particular age groups who may be supervised by a single teacher, and set minimum educational standards which must be met by teachers and directors in day care services.[22] Another notable change frees the Health Department from the administration and licensing of boarding and foster homes for children, which, historically, the department had pioneered in New York State, but which, in the course of its development, had become the province of the State Department of Social Welfare outside of New York City. The

function is being transferred to that department, where additional social case workers will be available through whom problems of guardianship, adoption, and the like, common in this group of children, can be more effectively handled. Many of these homes keep children aided financially through the Welfare Department—another reason for the change.[23]

A new article in Title III reflects a new development in the child care field —namely family day care, the daytime care of a small number of children in the home of an unrelated family. The new article regulates and sets standards for such care, which, increasingly, is being utilized for children who are too young, or who for other reasons need daytime care in a family environment rather than in a day nursery or kindergarten.[24]

It is clear that in this area the code goes beyond the traditional subject matter of many health codes. Some of the reasons for this are historical—the City Health Department was the first in the state to concern itself with the care of children in foster homes, in children's institutions and shelters, and in day care services. State law was later frequently written "around" already existing city legislation. As the only agency in the field, initially, the lines between strict matters of "health" and matters of the general care, safety, and well-being of children tended to be blurred and remained so. It is here that the city charter's authorization to legislate in matters wherein the department has authority, not limited "to the subject of health only," is most often called into play. It is in this area, also, that the department shares much of its authority with other city and state agencies concerned with matters of education, social welfare, and mental health.

Part A of Title IV, which deals with the regulation of food, drugs, and cosmetics and with the regulation of food establishments, contains some significant changes and shifts in emphasis. It has already been noted that the Health Code analogue to the Federal Food, Drug, and Cosmetic Act omits the bulk of the misbranding and economic adulteration provisions. The Board of Health decided to leave the matter of economic fraud to state and federal administration, where it is amply covered by law, in the belief that the City Health Department can achieve greater effectiveness in areas more directly concerned with public health. The board has indicated its intention to reenter the field, however, if an increase of fraudulent practices in the sale of food were to create apprehension as to public health consequences. Another significant change is the inclusion of regulations on the use of chemical additives to food.[25] As enacted, the new code adopts the recent food additives amendment of the federal law, and accepts the use of food additives pretested or otherwise approved under federal law. As an interesting bit of chronology, it should be mentioned that the Board of Health, almost half a year before the federal law was passed, had authorized the distribution of a discussion draft of chemical food additives regulations which went considerably beyond the federal legislation. It would seem, on the basis of the comments received on the Health Department discussion draft, that the passage of the federal legislation—which had been stalled for several years—was encouraged, to say the least, by the imminence of stringent local regulation by the largest municipality in the country. When the federal amendment had passed, the Board of Health decided to follow the federal law locally, so as to give it a fair try and avoid possible problems of inconsistency.

Instead of treating food sanitation piecemeal, with detailed separate requirements for wholesale and retail establishments, restaurants, dry ware-

houses, and so forth, the new code in the first instance deals with food handling and food sanitation generally, imposing specific requirements for individual types of establishments in a manner supplementary to the general food sanitation provisions. The general article on food handling and food establishments[26] thus sets forth the broadly applicable requirements for food sanitation in all establishments where food is handled. The article relies to a great extent on performance standards, with emphasis on clean and sanitary food products manufactured, prepared, sold, or served in clean and sanitary food establishments. In de-emphasizing the detailed, specific standards of an earlier age, the new code imposes a greater obligation on industry for self-policing, under continuing department supervision. The emphasis on performance standards, it is hoped, will also encourage the continuing development of new technological advances in food sanitation and manufacture, particularly in the use of new chemical aids and more advanced sanitary design of machinery. This encouragement of industry initiative and self-sanitation—all under continuing department supervision—is further implemented by a broadening of the self-inspection requirement. Under the old Sanitary Code only restaurants were required to keep on file periodic self-inspection reports, while under the new Health Code all food establishments must follow self-inspection procedures and must keep monthly self-inspection reports.[27] While these self-inspection reports cannot be used, of course, as a basis for prosecution for violations of the code, they serve a useful educational and self-policing function; failure to keep the required self-inspection reports, however, would be a misdemeanor under the code.

The general requirements for food handling and food establishments are followed by a series of articles dealing with specific types of establishments and with specific products, including supplementary provisions for wholesale food establishments and commissaries, retail food processing establishments, restaurants and other eating places, meat and meat products, poultry slaughtering and processing, shellfish and fish, preparing, preserving, and smoking fish, and milk and milk products and frozen desserts. In every one of these areas—with the exception of the milk and frozen dessert field—it was possible to rely largely on the general food-handling standards previously prescribed, adding specific requirements only where needed to protect against health hazards connected with particular operations. In the milk and frozen dessert areas, in spite of almost a year's work on the draft, labor and industry groups proved so resistant to changes, which, although not major from the public health point of view, might have affected established economic and trade practices in the field, that the board decided to make a minimum of substantive changes in existing requirements, and to put over more far-reaching changes for a while, until additional economic as well as public health research can be brought to bear on the issues.[28]

Part B of Title IV, Control of Environment, contains all of the provisions on environmental sanitation other than food, drug, and cosmetic control. The most notable additions to this part of the code are the articles on radiological hazards and on hazardous substances. The radiological hazards article,[29] which primarily affects medical and research use of devices and substances emitting ionizing radiation, comprises the first comprehensive municipal radiation safety code in the nation. It provides for registration of all radiation installations, for safety standards for operation and equipment, for reporting of accidents and other untoward occurrences, and limits the use of radiation—including x-ray—

for diagnostic and therapeutic purposes to licensed practitioners in the healing arts—physicians, osteopaths, dentists, and podiatrists.

The article on hazardous substances[30] deals with a somewhat more common problem, namely the increasing use of dangerous chemical substances in detergents, cleansers, polishes, sprays, and the like, in the home, in gardens, and other places. Inspired by the long years of experience of the department's poison control center, the article requires detailed imformative labeling of hazardous substances so that users may take precautions against the risks involved, and so that antidotes may be promptly administered when necessary. The requirements were carefully worked out with the cooperation of the American Medical Association's Committee on Toxicology and with experts in the chemical industry. The scope of coverage of the new provisions may be gleaned from the definition of "hazardous substance," which includes toxic, flammable, corrosive, or irritant substances, as well as strong sensitizers and substances which generate pressure through decomposition, heat, or other means; the reasonably anticipated use of such substances is defined to include its abuse, such as its ingestion by children.

On the less spectacular side, though of considerable importance, is the updating of code requirements for the sanitation of buildings, drinking water supply, and disposal of sewage. For the first time the code also contains an article on control of water pollution,[31] which may become an important instrument in restoring or maintaining the cleanliness of the waters surrounding the City of New York, although the City Department of Public Works has long had, and will continue to have, responsibility concerning technical aspects of sewage disposal and sewage disposal plants.

The last major segment of the code, Title V, Vital Statistics, covering the reporting of vital events and the requirements for the burial and cremation of the dead, contains no major substantive changes. The aim here has been to consolidate many scattered code provisions, regulations, and rules into a unified whole reflecting current practice in the vital statistics field. The provisions relating to the performance of autopsies have been clarified, as have been the requirements for the preparation and filing of reports. Although the changes in this area have been minor, a clearer, better integrated vital statistics code is important not only as a tool of modern public health administration, but also because so many important legal rights, including citizenship, paternity, and inheritance, are directly dependent on proper reporting of vital events and on accurate maintenance of vital statistics records.

Conclusion: A "Model" Code?

In the light of the great effort expended in the preparation of the new Health Code, and of the considerable public interest engendered, the question has been posed whether the new Health Code of New York City is intended as a model for other municipalities and jurisdictions. The answer depends on what is understood to be a "model" code. Clearly, the primary aim and responsibility of the Board of Health was to provide a new code for the City of New York. This involved recognition of the specific public health problems of the largest city in the world, some of which are probably unique, as well as a consideration of the legal and administrative setting of the Board and Department of Health within the framework of municipal and state government. Under the circumstances, the new code as a whole cannot possibly be adopted by any other municipality in the country. The very effort made to fit the new code precisely into the existing structure of New York

government, without inconsistencies or undue overlap, prevents its wholesale adoption by other jurisdictions having other patterns of law and administration. This does not mean, however, the important segments of the new code could not be utilized elsewhere. Such discreet portions as the material on reportable disease, or on hazardous substances, on radiological hazards or on food handling and food establishments are easily capable of adoption.

Is the new code as a whole, then, to be viewed as a "model" in any sense at all? The answer should be yes. Whatever the result, the methods and aims of the revision, at least, were sound. It is to be hoped that the approach of the revision, the study of the public health needs, the study of the means, technological or legal, to solve the problems of modern public health administration, as well as the thorough study of the legal powers and remedies available in the formulation of new law, may serve as a sample effort for other jurisdictions. Others, using similar methods and aspiring to similar goals, may well achieve greater results. In a sense, each municipality must develop its own "model," by putting to work the knowledge of men and women in science, industry, medicine, and the law to formulate a code which will best reflect modern thought in the field of public health to meet its own needs for sane and healthful living. If, in this endeavor, the New York City Health Code can help to point the way, then, in this modest sense, it is a "model" code.

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2. The authors were involved in the revision as commissioner of health and ex officio chairman of the Board of Health, and as director of revision, respectively.
3. Expenditures by the New York City Department of Health, if approved by the State Department of Health, are automatically reimbursed to the extent of fifty per cent.
4. The Legislative Drafting Research Fund, established at Columbia University in 1911, is one of the oldest—and perhaps the oldest—legislative research and drafting organizations in the country. The work of the Fund is addressed to legislative problems of public importance, undertaken chiefly at the request of legislative committees, executive agencies, and private civic and other law-improvement organizations. The Fund was established to provide opportunities for laboratory work in the legislative development of the law; its connection with Columbia University and the Columbia School of Law provides the opportunity for training lawyers interested in the study of legislative processes and in the improvement of legislative research and the drafting of legislation. John M. Kernochan, professor of legislation at the Columbia School of Law, is the director of the Fund.
5. New York City Charter, § 553. Members of the board associated with the revision have been Dr. Haven Emerson, professor emeritus, and former director, Columbia University School of Public Health; Dr. Thomas M. Rivers, member emeritus of Rockefeller Institute, former director of hospital of Rockefeller Institute; Chester I. Barnard, former president of the Rockefeller Foundation, and former chairman, General National Science Foundation Committee; Paul R. Hays, professor of law, Columbia University; Dr. Samuel Z. Levine, pediatrician-in-chief and professor of pediatrics, New York Hospital-Cornell Medical Center; Dr. Lewis Thomas, professor and chairman, Department of Medicine, New York University, and director, Third and Fourth Medical Division, Bellevue Hospital; and Dr. Leona Baumgartner, commissioner of health and chairman of the Board of Health.
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7. New York City Charter, § 558(d); New York Penal Law, § 1740; also see New York Penal Law, § 1937.
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9. See, e.g., Frank v. Maryland, 359 U. S. 360, 79 S. Ct. 804 (decided May 4, 1959), concerning the right to conduct health inspections of homes without a warrant.
10. Health Code § 3.01(a).
11. Health Code, Article 101.
12. Health Code, Article 81.
13. Health Code, Article 163.
14. See, e.g., Health Code § 45.03; § 145.09; § 173.19; Introductory Notes to Articles 73, 101, 131, 135, 139, 141, 143, 145, 175, and others.
15. See, e.g., provisions on chemical additives to food in Article 73.
16. The provision of § 91 Reg. 3 of the old Sanitary Code requiring quarantine and placarding of premises had long been a dead letter, although it remains a part of the law until October 1, 1959.
17. In the main, "Control of Communicable Diseases in Man," published by the American Public Health Association in 1955 (8th ed.), was followed.
18. Health Code § 11.51.
19. Health Code § 11.63.
20. Health Code § 11.03.
21. Health Code, Article 43.

22. Health Code §§ 47.09–47.11.
23. See Introductory Notes to Title III.
24. Health Code, Article 53.
25. Health Code, Article 73.
26. Health Code, Article 81.
27. Health Code § 81.39.
28. Official statement by Board of Health, dated February 23, 1959.
29. Health Code, Article 175.
30. Health Code, Article 173.
31. Health Code, Article 145.
32. New York City Charter, §§ 683, 687.

Dr. Baumgartner is commissioner of health of the City of New York and Mr. Grad is associate director, Legislative Drafting Research Fund, Columbia University, New York, N. Y.

Mental Hospital Survey Advisers

Surgeon General Leroy E. Burney has appointed an Advisory Committee to assay the future needs for mental health facilities in the country. In announcing the membership Dr. Burney pointed out that earlier emphasis has been on institutional care. Services now being developed, however, include outpatient care through hospital clinic or mental care centers, treatment of psychiatric patients in general hospitals, "half-way houses," and nursing homes.

The 12-member committee includes state health officers Bernard Bucove, M.D., of Washington; R. L. Cleere, M.D., of Colorado; and Terrell O. Carver, M.D., of Idaho; as well as John J. Bourke, M.D., executive director of New York's Joint Hospital and Planning Commission; Dale C. Cameron, M.D., medical director, Minnesota Department of Public Welfare; Stewart T. Ginsburg, M.D., Indiana Commission on Mental Health; and Jack C. Haldeman, M.D., chief of the Hospital and Medical Facilities Division of the Service.

This is a case report on coordinated health services in the Canal Zone. From this case study the authors derive principles which may be applicable to communities in the United States.

COORDINATED HEALTH SERVICES IN THE CANAL ZONE

A CASE STUDY AND SOME IMPLICATIONS FOR THE UNITED STATES

I. S. Falk, Ph.D., F.A.P.H.A., and Colonel Charles O. Bruce, MC (USA), M.P.H., F.A.P.H.A.

THE MORE complex our health services become the more they need coordination. This need, already common and persistent, grows more acute as technical progress continually brings further specialization. If the services lack coordination, their effectiveness is reduced, many potential benefits are unrealized, and costs are higher than they need be. To the maximum extent practical, the pattern of organization itself should interlock the health services so as to reduce overlaps, gaps and discontinuities among them, and so as to achieve mutual supports and economies, minimizing the need for special technics of coordination.

In this paper we present a case study of the Canal Zone on the Isthmus of Panama which offers unusual opportunities to observe the functioning of a coordinated program of comprehensive health services. A recent survey[1] provides extensive data on population, services, and costs.

Background of the Health Program

Health progress has been dramatic in the Canal Zone. For 400 years the Isthmus of Panama was a tropical graveyard for explorers, conquerors, traders, and travelers using it for a short crossing between the Atlantic and Pacific Oceans. Private United States' interests built a railroad across the Isthmus in 1850-1855, but with a mortality rate of about 40 per cent among the employees. Between 1880 and 1895 the French tried to dig a canal across the narrow land and failed largely because of the frightful toll taken by yellow fever, dysentery, typhoid, malaria, smallpox, and other diseases. Then, shortly after the turn of this century, the United States undertook the project. Under the direction of Major (later Surgeon General) William Crawford Gorgas, USAMC, urban yellow fever was wiped out, malaria was brought under substantial control and sanitation was developed in the Zone, and in adjacent Panama City and Colon at the terminals, so that construction could proceed under conditions of increasing safety and health. When the Canal was opened to shipping in 1914, the Zone was a relatively healthy area by subtropical as well as by tropical standards of the time. Since then the health program has been adapted to changing conditions. It retains, however, the basic pattern evolved by Gorgas: unified administration of commu-

nity and personal health services, and the provision of personal health services through coordinated facilities and salaried staff.

The health organization and services have functioned effectively. In 1906, when canal construction began, the crude death rate in the United States was about 17 per 1,000 and in the Canal Zone about 50; in 1956, when the rate in the United States was 9.4, in the Zone it was about 4 and, standardized for difference in age distribution, about 7.5. For the ages under 65 the rate in the United States is now about 4.4 and in the Zone it is 3.0. The maternal mortality rate is only a small fraction of that in the United States. And reportable diseases show similar rates in the USA and in the Zone.

On the whole, the Canal Zone now enjoys a high level of health, achieved and maintained despite constant threats to health from the tropical environment, the surrounding areas and population of Panama, and the large volume of shipping which comes from all quarters of the globe to pass through the Canal or dock at its ports.

Description of the Health Services

The Canal Zone is a narrow strip about five miles on either side of the Canal route with an area of about 550 square miles, utilized only for Canal operations and defense. Civil functions are lodged in the Panama Canal Company, a public corporation, which operates the Canal and is financed by tolls and revenues; and in the Canal Zone Government, an independent agency in the Executive Branch of the United States government, which is responsible for the community services (police and fire protection, health, education, postal services, magistrates courts, and others) financed by an annual appropriation from Congress with net costs reimbursed by the company. These two agencies are coordinated; the governor of the Canal Zone is ex officio the president, and the lieutenant governor is the vice-president of the company. The US military forces are under the Caribbean Command whose headquarters are in the Zone.

About 46,000 persons live within the Canal Zone—about 31,000 USA citizens (of whom about 18,000 are military personnel and their families) and about 15,000 others mainly of Caribbean Negro stock. Employees who live in adjacent areas of the Republic of Panama and their dependents increase the total normally eligible for health service in the Zone to about 82,000. The population is largely concentrated near the terminals of the Canal, facilitating the provision of personal health services. The health program also serves the passengers, officers and crews of the Canal shipping, visitors to the Zone, and various other small groups.

The health director is responsible for health in the entire Canal Zone except for certain limited functions of the military on their reservations. Since the Zone undertakes to be essentially self-dependent, the Health Bureau's operations include both the community services ordinarily provided in the United States by local, state, and federal public health agencies and the personal health services furnished by private and public practitioners, hospitals, and others.

The bureau's community services are provided through four administrative units: The Division of Sanitation, which works in close cooperation with the Armed Forces responsible for sanitary services in the military areas, the Division of Preventive Medicine and Quarantine, the Division of Veterinary Medicine, and the Vital Statistics Office.*

The bureau's personal health services

* Since this paper is focused on the personal health services, details of the community service operations are omitted here. They will be found in Reference 1.

are provided through a system of coordinated facilities summarized in Figure 1. The principal institutions are the two community health and hospital centers: the Gorgas Hospital and its annexa on the Pacific side and the Coco Solo Hospital and its annexa on the Atlantic side, which together now maintain 5.3 beds per 1,000 persons normally eligible for care. They are supplemented by the Corozal Hospital which provides 3.6 beds per 1,000 for psychiatric and domiciliary care, and by the Palo Seco Leprosarium with about 125 patients. This system provides care which in general is of high quality by USA standards, despite the handicap of location in this outpost tropical area.*

The other local health resources are (a) the "district" dentists, the only private practitioners in the Canal Zone; (b) the Armed Forces dispensaries, providing first-level medical and dental care for the military personnel and dependents; and (c) the medical and hospital facilities of the Republic of Panama.

The Gorgas Hospital, widely known for its contributions to the conquest of tropical disease, occupies a massive plant which is now obsolete, and studies are under way for its modernization or replacement. This health and hospital center provides comprehensive care for about 57,000 persons normally eligible on the Pacific side of the Isthmus and for a miscellany of other authorized patients, and it furnishes highly specialized clinical and technical services for all others eligible for care in the Zone. Outpatient services include medical visits to homes and ships, two aid stations nearby, a comprehensive dental clinic, a medical clinic at Gamboa 18 miles away, and, intramurally, an emergency clinic, two general outpatient clinics for United States and other patients, and 23 specialty clinics. Inpatient services, with 324 beds set up and staffed, are organized for all the usual fields of specialization. The full-time salaried clinical staff and the supporting technical units serve both the ambulatory and bed patients. As of August 1, 1958, the house staff of 36 physicians included 16 diplomates in their specialties; and there were 18 residents (in seven fields) and 15 interns. The staff is supplemented by four part-time consultants from Panama.

The Coco Solo Hospital, a relatively modern facility which was formerly a Navy hospital, serves the 25,000 persons normally eligible and the patients from the Canal shipping on the Atlantic side. It provides general and limited specialty preventive and curative care through salaried personnel, relying on the Gorgas Hospital for highly specialized services and visiting staff. Its outpatient activities include home and ship calls, operation of five aid stations, an emergency clinic, general clinics, 11 specialty medical clinics, and a dental clinic; and its inpatient services with 110 beds function through medical and surgical, obstetrical and pediatric wards.

The Canal Zone, like less remote places, has some difficulty in obtaining all needed professional and technical staff without compromising high standards. The physicians and dentists are recruited with primary regard for education and training, board certification, experience, teaching, and research ac-

* The remoteness is more geographical than professional. Since Panama is the "Crossroads of the World" the area is visited every year by an impressive number of authorities in the fields of preventive and curative medicine who give generously of their time as consultants and lecturers. The Medical Society of the Isthmian Canal Zone has held monthly professional meetings regularly for the past 52 years. Medical consultants from the United States, commissioned to visit the Canal Zone by either the federal agencies of the Zone or the voluntary health services (notably the Canal Zone Chapter of the National Cancer Society) provide professional stimulus to the Health Bureau staff. And a recently intensified program for sending Health Bureau employees to the United States for refresher courses and attendance at schools and professional society meetings promotes intellectual alertness essential for community and personal health service of a high order.

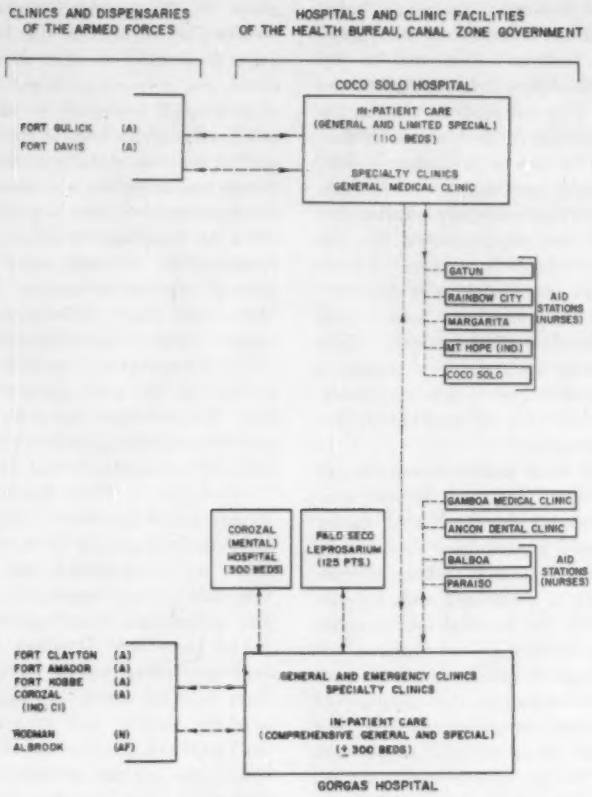

Figure 1—Diagrammatic Summary of Facilities for Personal Health Services, Health Bureau, Canal Zone Government, and Armed Forces, Canal Zone

tivities. Appointments are on the United States Civil Service schedules, supplemented by 25 per cent overseas allowance (with a ceiling of $16,250 a year) and generous leave. Housing is provided at moderate rentals and living costs are relatively low. The United States permanent career staff is augmented by qualified non-United States personnel, and also by assignments from the Armed Forces whose military personnel, civilian employees, and dependents receive nearly one-half the services provided.

The other senior professional and technical personnel and graduate nurses are all well trained United States citizens; the ward attendants are non-United States personnel, locally trained. The auxiliary technicians, administrative and clerical personnel, and the service workers comprise both USA citizens and non-citizens.

The staffing is nearly adequate. A current total of 114 physicians (including interns and residents) is equivalent to one per 725 persons normally eligible for the health services—about 93 physi-

cians in the Health Bureau are equivalent to one per 890 normally eligible, and about 21 in the Armed Forces to one per 900 in the groups they serve. The 39 dentists (in the Health Bureau, Armed Forces, and private practice) are equal to one per 2,100 persons. The 208 graduate nurses employed full or part time equal one per 400 persons. These crude ratios tend to overstate the staff actually available because of turnover, leaves of absence, and the obligations to meet the special needs of military personel and to serve ship and other transients.

The Health Bureau encourages initial requests for personal health services, and a relatively large volume of care is provided because the population is intensely health conscious. In general, eligible persons from the civilian population groups apply at the aid stations staffed by nurses for minor or first-aid care and for routine preventive services (immunizations, well-baby examinations, and so forth), and they come to the general clinics at stated hours without appointment for attendance by physicians. When indicated, the patients are referred to the specialty clinics by appointment or to the inpatient services. The specialty staffs are available as consultants to the general physicians, serve both outpatients and inpatients, and provide as much continuity of care as their resources permit. The referral procedures also operate reversely—from the inpatient services to the specialty clinics, general clinics, and aid stations. Home and ship calls are handled by the general clinics except when specialty services are needed. The referral services also operate extensively among the various institutions—especially between the Coco Solo and Gorgas Hospitals.

For the military personnel and their dependents, the Armed Forces provide in their own dispensaries preventive services and nonspecialty diagnostic and treatment care (medical and dental);* but for all specialty ambulatory services and for all inpatient care they refer their patients to the facilities of the Health Bureau.

In general, except when away from the Zone, United States personnel and their dependents obtain all of their health services at the Canal Zone facilities. Small proportions obtain part or all of their medical and hospital care in Panama, so that the data on services provided within the Zone to these groups slightly understate total volume of service they receive locally. Non-United States personnel and dependents residing in the Zone tend to obtain all of their health services within the Zone; but those who reside in Panama use both the Zone and Panama resources.

Part of the costs of the personal health services furnished to employees of the Panama Canal Company and the Canal Zone Government and to their dependents are recovered from patients because in 1953 Congress forbade "free" medical or hospital care. A medical tariff based on production costs prescribes basic charges which are then graduated so that these patients pay 10-50 per cent according to wage class. In the aggregate, their charges reimburse about 20 per cent of the costs incurred for them in the Gorgas and Coco Solo facilities; the remaining 80 per cent constitute a fringe benefit of employment equivalent to about 3 per cent of payrolls. For the patients "sponsored" by the Armed Forces and certain other United States government agencies, the tariff prescribes full reimbursement through inclusive rates, reduced by the amounts the patients are required to pay.

The collection of fee-for-service charges from civilian patients compli-

* The Navy presents an exception. Owing to recent reduction of medical staff, dependents are provided only emergency care at its dispensaries; they are authorized to go direct to the Health Bureau facilities for all needed care.

cates operations and, despite the adjustment of charges to wage levels, creates some barriers to needed care. Voluntary commercial group insurance against inpatient costs for company and government employees and dependents was instituted early in 1957. Comprehensive group payment, in lieu of fees and a corrective voluntary insurance, and basic revision of the budgeting pattern for the hospitals are under active consideration.

Some Data on Personal Health Services

The Gorgas and Coco Solo Hospitals, built to serve larger population groups with much higher morbidity rates, now have excess inpatient capacity. Occupancy rates for the beds now used are about 80 per cent and 75 per cent, respectively.

In fiscal year 1958 these two institutions had 12,400 inpatient admissions and provided 121,000 inpatient days. Their clinics and aid stations had 277,000 outpatient attendances, over five times the outpatient load in relation to occupied beds in general hospitals of comparable sizes in the United States. Excluding care for transients from shipping, etc., and for tuberculosis cases, the services in fiscal year 1957 were equivalent to 126 inpatient admissions per 1,000, 1.2 inpatient days per person, 9.4 days per admission, and 3.0 outpatient attendances per person.

The nearly 10,000 company and government employees and dependents who are USA citizens have a low average age, with few over 60 and almost none over 65, and an average annual local residence of about ten and a half months. They have been receiving as inpatients about 136 admissions per 1,000 —compared to 120 per 1,000 in the short-term general and special hospitals of the United States, and 0.9 days per person or the same amount as the average in the United States; and as outpatients about four attendances per person. These rates indicate reasonably adequate volume of care. Indeed, when standardized for age distribution and residence, they are somewhat higher than the average in the United States.[2]

In the fiscal year 1957, the personal health services, exclusive of the mental disease hospital and leprosarium, had a gross operating cost of $4.75 million. The amount incurred for the population normally eligible was equivalent to about $48 per person. For civilian United States personnel the production cost was about $46 per person ($52 for employees and $42 for dependents), about two-thirds of the amount spent privately per person for medical care in the United States.[3] These are relatively low costs for comprehensive services of high quality in a remote area.

The ambulatory services at the general hospitals and annexa, including all operating costs incurred for professional attendants and for supporting services, cost $4.60 per visit ($5.22 at the Gorgas and $3.32 at the Coco Solo facilities). For the hospital clinics alone the costs were $6.42 per visit at Gorgas and $4.39 at Coco Solo. The gross inpatient operating cost, including attendance by the salaried house staff, was $27 per day ($26 at Gorgas and $28 at Coco Solo).

Using the accounting practices of the "Government Reimbursable Cost Formula," the average inpatient day cost was $21 at Gorgas and $23 in hospitals of comparable size in the USA; and it was $19 at Coco Solo as against $21 in comparable USA hospitals.* The costs of inpatient physician attendance excluded from these adjusted hospital costs amounted at Gorgas to about $15 per admission and at the smaller and inherently less economical Coco Solo Hospital to about $30 per admission. These figures suggest that large eco-

* Cost data for United States hospitals are from special tabulations of "reimbursable" costs by size of hospital provided by the American Hospital Association.

nomies are achieved through full-time salaried staffing and comprehensive group practice.

Total Costs of the Health Services

In the fiscal year 1957, the administrative and community services cost $6.26 per eligible person. All of the personal health services—including the Gorgas and Coco Solo Hospitals and their annexa, the Corozal (mental and domiciliary) Hospital, and the Leprosarium—cost $55.80 per person. The total for all services, reduced pro rata for costs incurred with respect to transients and others not normally eligible, was $59.36 per person. This figure is incomplete, lacking the military expenditures and the private expenditures in the Zone, in Panama, and when on leave. But even if the nonincluded items were estimated, generously, to add as much as 20 per cent, a total of about $70-$75 per person would still be a very modest cost for health services in the Zone—recalling that combined public and private expenditures are about $100 per person in the United States.[3]

Some Comments on Organization

With only minor exceptions, the health services of the Canal Zone are coordinated. The civilian community and personal services make extensive common use of staff and facilities.* The civilian personal health services, except those of the private dentists, are completely integrated group practices. The military dispensaries operate independently, but only for limited general services; they are coordinated with the comprehensive civilian services through a two-way flow of referrals for all specialty clinic care and for all inpatient care.

It is therefore not surprising that the civilian health program of the Zone avoids many of the problems of organization, administration, operation and costs common in communities in the USA. For example, physicians are on salaries and are not in financial competition with each other or with the supporting services; for general and special personal services they can draw freely on all the clinical and technical resources, and admissions and referrals can be made on strictly professional grounds, according to the patients' needs.

We would not seem to imply that the program is without shortcomings. We wish to emphasize, however, that it has been providing effective community services and relatively large amounts of personal care of high quality at relatively low cost; and that it has made possible healthy community living despite a potentially adverse location.

Some Implications

Though this is primarily a case report, we are emboldened to suggest some implications. Many circumstances and needs of the Canal Zone are different from those of typical USA communities; however the contrary is also true. The provision of health services in the Zone, especially of the personal services, presents many basic problems which are the same there as in urban, suburban,

* Two examples: Clinics, laboratories, and other units located in the medical centers provide technical services for the Division of Sanitation, the Division of Preventive Medicine and Quarantine, and the Division of Veterinary Medicine.

A recent poliomyelitis immunization program, reaching over 90 per cent of the school children and 25 per cent of the adults under age 40, was organized and directed by the chief of preventive medicine and quarantine; but the injections were given by school nurses of his staff and by nurses from the hospital staffs, the syringes and other materials were obtained from the hospital central sterile supply services, and medical supervision was provided by the school physician on his staff and by physicians of the hospital staffs; and the Canal Zone Chapter of the National Foundation participated actively.

and rural areas of the United States, reflecting universal characteristics of the technology and objectives of modern medicine and public health. The discreteness of the area permits the health program of the Zone to be viewed as though it were a laboratory experiment to test an organizational design.

We appreciate that in principle the plan of organization is neither new nor novel. More than 25 years ago, the Committee on the Costs of Medical Care presented as "An Ultimate Objective in the Organization of Medicine"[4] a design which in many fundamental respects is a substantially accurate description of the Zone's civilian health services of today. And major elements of the plan can be observed in the various US communities, urban and rural, which have clinic and hospital—and even subcenters—served by a common salaried staff functioning as a group, and which in some cases embrace elements of the community health services.

Fifty years' experience in the Canal Zone suggests that the following are the essentials of good organization for modern health services:

1. Lay and professional sponsorship, voluntary or official, qualified to design the organization, to select competent primary staff, to effect adherence to high standards of performance and to inspire public confidence in the quality of the services;

2. Coordination of qualified staff for inpatient, ambulatory and home services, general and special, adequately remunerated by salaries or by other arrangements that encourage and do not conflict with the objectives of good group practice;

3. Coordination of facilities for preventive, diagnostic, curative and rehabilitative care;

4. Coordination of community and personal health services, with maximum practical common utilization of staff and facilities;

5. Adequate financing, whether through the whole community, group payment for the population to be served, or through various combinations of financial sources and methods.

In the United States we have many alternative courses for developments that could proceed toward these goals. For example, with respect to personal services, general hospitals which already have coordinated inpatient and outpatient care for nonpaying patients might extend it to patients who pay on individual or group bases; group clinic practices might become group clinic and hospital services; nongroup practices might give renewed attention to the development of groups within hospital-and-clinic facilities; general hospitals serving the patients of individual private practitioners might encourage the trend for physicians to locate their offices at hospitals,[5] and further explore the evolution of comprehensive house staffs that would function as groups; and many agencies controlling funds available for group payment of medical costs might emulate those which already finance coordinated services. Wherever feasible, the development of organized comprehensive personal services should invite maximal utilization of these resources for the community services—through joint housing and common use of technical services and professional staff.[6]

The existing diversity of medical organization in the United States reflects experimentation on a massive scale over many years; and ever-changing technology suggests no end to experimentation. But perhaps the times are ripe for more extensive application of tested principles and practices which contribute to coordination, group practice, and continuity in the services. To this end the pattern of coordinated services developed in the Canal Zone deserves careful consideration for its potential value to other communities.

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Congressional Focus on "JD"

By January 1, 1960, the National Institute of Mental Health and the Children's Bureau are to be ready to present Congress with a "most useful and thoughtful study" on juvenile delinquency. This study, requested by the House Appropriations Committee, is to include legislative and fiscal proposals for juvenile delinquency research and demonstration projects.

The current projects of NIMH in combating juvenile delinquency were described at hearings of the committee (86th Congress 1st Session, pp. 577-582). Journal readers will find a digest of NIMH's report at these hearings in the bulletin of the Social Legislation Information Service (Aug. 10, 1959, issue, No. 30). This includes concise statements on NIMH's projects in Michigan, Quincy, Mass., and New York City's lower East Side, and summaries of its other activities aimed at helping delinquent children.

The development of new technologies may produce new occupational hazards. Some aspects of this problem as it relates to newer metals are presented in the following paper.

HEALTH AND SAFETY IN HANDLING THE NEWER METALS

William B. Harris

THE DEVELOPMENT by G. J. Kroll, of the U. S. Bureau of Mines, of a novel metallurgical technic,[1] has led to the freeing of many new metals. This technic involves the reduction by one of the alkali metals, primarily calcium and magnesium, of a halogen compound of the metal to be separated. These compounds are usually in the form of chloride or fluoride.

As a result of this very important metallurgical development, production quantities of highly purified forms of such metals as uranium, thorium, beryllium, titanium, zirconium, and plutonium are now available. Use of these highly reactive materials, however, is not without some danger in the manufacturing process. Because of highly desirable and unusual properties, many of these metals are of great interest to the atomic energy program, and as a result, a great deal of experience has been gained in their handling. I will discuss some of the hazards which are involved in the use of some of these materials, and procedures which have been developed in the atomic energy program for their control.

Thorium and Uranium

The two elements which form the major portion of the nuclear fuel supply are thorium and uranium. Uranium, either as the natural material or in some degree of enrichment, is the more important fuel, while thorium is receiving attention as a blanket material from which to breed U^{233}. In any event, the properties of these two materials are not sufficiently dissimilar to warrant their separate treatment.

Both uranium and thorium are pyrophoric materials, although uranium is significantly less stable than thorium. A dust cloud of uranium will ignite at room temperature, while the ignition temperature of thorium is 270°C. It is interesting to note in this respect, however, that the minimum energy required for the ignition of thorium is considerably less than that required to ignite uranium, and comparable to that required to set off uranium hydride in a dust cloud. A layer of uranium dust, however, requires the same amount of energy as a layer of thorium dust.[2]

The lower explosive limit for each material is not significantly different nor is the maximum pressure developed during an explosion. It is obvious from the above that handling of powders either of uranium or thorium requires some isolation to be perfectly safe, although this is much more true for uranium than it is for thorium. It appears that although thorium will ignite very readily, there must be some elevation in temperature before this will happen (Table 1).

As far as practical experience with these materials in concerned, there have been more incidents of fire and explosion involving uranium than have been

noted with thorium. However, this might be due to the fact that uranium has been used much more extensively, and it might be pointed out that the single serious incident which has come to our knowledge in which thorium powder reacted with explosive violence was much more serious than any of the uranium incidents.

The ignition of uranium powders and materials resulting from uranium powders appears to be limited to passive burning. Although this can occur without disaster, it must not be concluded that it is without danger. In the first place, conversion of the powder to oxide, once begun, is very difficult to stop. This, of course, results in a degrading of quality and a subsequent monetary loss. In addition, the oxide fume which is formed is of extremely small particle size and is readily made air-borne.[3] This results in dissemination of a very fine fume into the air which can readily enter the lung. Fortunately, the conversion is quiescent and, therefore, the proportion of fume that is thrown into the air is relatively small. Air samples which were taken, for example, in a 30 cubic meter sealed room after the combustion of approximately 100 gm of uranium as chips showed average dust concentra-

Table 1—Ignition and Explosion Properties of Dust Clouds[2,8]

Element	Per cent Through 270 Mesh	Ign. Temp. °C	Conc. Oz./Cu. Ft.	Max. Pressure Rise Psi/Sec.	Max. Pressure Rise Secs. to Max.
Al	80	645	0.1	2,080	0.040
			0.5	5,700	0.029
			1.0	2,350	0.049
Mg	86	570	0.1	1,200	0.060
			0.5	2,570	0.048
			1.0	2,840	0.040
Fe	99	320	0.2	600	0.061
			0.5	1,200	0.044
			1.0	1,200	0.047
Si	86	775	0.2	360	0.187
			0.5	1,180	0.141
			1.0	940	0.163
Ti	92	480	0.1	430	0.104
			0.5	1,120	0.059
			1.0	1,640	0.071
Zr	100	70	0.2	140	0.140
				1,590	0.091
				2,570	0.070
Sb	88	415	0.5	50	0.200
Mn	63	450	0.5	300	0.139
Zn	100	600	0.5	300	0.093
U	100	20	0.060	5,100	
Th	100	270	0.075	6,100	
Zr	100	20	0.045	5,000	0.07
Ti	100	330	0.045	6,100	

tions which were below the permissible breathing concentration.

To put the toxicity of uranium into a recognizable frame of reference, it should be pointed out that the maximum permissible concentration for uranium as defined by the NCRP* in Handbook No. 52, and also by CFR† 10, Part 20, which is the official AEC standard for licensed operations, is 5×10^{-11} μc/ml for an occupational exposure of 40 hours per week. This value converted to gravimetric quantity is approximately 80 $\mu g/M^3$. This quantity of material in the air represents a relatively severe restriction inasmuch as the material is very dense, and at the same time is apt to be easily air-borne. It does not take much handling of uranium powder to throw considerably more than 100 $\mu g/M^3$ into the air which can be breathed by workmen.

As a comparison, the maximum permissible concentrations of several of the more toxic metals have been defined by the American Conference of Governmental Hygienists. The most recent revision of these values is listed in Table 2.

The toxicity of thorium, according to various authorities,[4] is pegged at the same level as uranium. Although there is some disagreement in this direction resulting from the high stability of thorium materials in the body and from lack of knowledge of the eventual site of deposition of these materials,[5] the similarities between uranium and thorium are sufficiently great to permit an assumption of equivalence as far as health hazards are concerned. Handling procedures are substantially the same as are followed with uranium.

Table 2—Typical Maximum Permissible Levels for Eight Hours/Day: Occupational Exposures

Element	$\mu g/M^3$
Copper	—[a]
Brass	—
Bronze	—
Iron	15,000[a]
Stainless	—
Ni	7[b]
Zn	15,000[a]
Co	—
As	500
Cr	100[c]
Cd	100
Pb	150
Hg	100
Te	100
Th	— (110)[e]
U	250 (80)[e]
Zr	5,000[a]
Ti	15,000[a]
Be	2[d]
Pu	0.0001[e]

NOTE: (a) as oxide
(b) as carbonyl
(c) as CrO_3
(d) Rec's of AEC Beryllium Advisory Committee
(e) CFR 10 Part 20
(f) all other values from ACGIH[3]

Zirconium and Titanium

Zr and Ti are materials which are of great interest to the atomic energy program because of certain special properties which they possess. These include relatively low cross-section to neutrons, reasonably good strength to weight ratio, high degree of corrosion resistance, and high degree of heat resistance.

Until very recently these materials were considered to be relatively nonhazardous to personnel engaged in their production and fabrication. As more experience became available with them, however, especially in their handling as powders, it became obvious that each of them, particularly Zr, possesses a very unexpected instability under certain, not well defined circumstances. The major Atomic Energy Commission experience with this type of hazard has involved the use of Zr, although there is some indication that Ti will also behave in a similar

* National Committee on Radiation Protection.
† Code of the Federal Register.

fashion. There is no intention here to incriminate Ti unnecessarily, but in view of the similarity of the materials and the Zr experience, it would certainly be advisable to be especially cautious in handling Ti powders.

Beryllium

Quite contrary to the properties of the materials discussed previously, beryllium presents extreme danger from the standpoint of toxicology, while there has been no experience which would indicate a danger from fire or explosion.

The nature of beryllium is such that it is extremely difficult to get strong machinable castings. As a result, it has been found to be more economical to use powder metal technics where massive shapes are desired. Because of this, a very large portion of all of the beryllium which is processed is eventually handled as a powder. Beryllium powder is a very light, fluffy material which can be very readily dispersed into the air. Procedures leading to the production of the powder and the powder handling must be very rigidly disciplined in order to prevent excessive air-borne concentrations.

As far as is now known, the only hazard which must be prevented is that of inhalation of the air-borne dust. The maximum permissible concentration of this material in the air, according to AEC recommendations,[6] is 2 $\mu g/M^3$ as an average daily exposure. The AEC policy further recommends a maximum short-term exposure of 25 μg. To put this in proper perspective, it means that if one is handling 25 pounds of powder in a 1,000 cubic meter room (approximately 50′ x 50′ x 12′), 2 x 10^{-7} of the initial material, if completely dispersed through the room, would exceed the maximum permissible quantity. It is obvious, therefore, that extreme measures must be taken to prevent any dispersion into the atmosphere.

One of the unusual things about beryllium toxicity is that a relatively small portion of the exposed population appears to be susceptible to the disease. To date, however, there is no known method for ascertaining the susceptible individual. It is therefore necessary to protect all.

In order to insure protection of individuals who are engaged in the handling of beryllium powders, there are several basic concepts which must be applied. A few of these can be briefly stated:

1. It is essential that every step in the process be equipped with local ventilation.
2. The size of ventilating hood openings must be as small as possible, consistent with accessibility, to prevent the escape of dust and for efficient use of ventilating air.
3. Hoods must be designed so that no operator need place his head inside during normal operation.
4. Air velocities at hood openings should be 150 ft/min or greater.
5. The use of dust respirators should be discarded except for very infrequent emergency use.
6. Rigid clean-up procedures, preferably by means of industrial vacuum cleaning equipment, should be maintained. The vacuum cleaner exhaust should be to the outside of the building.
7. The air should be monitored for dust levels on a frequent continuing basis.
8. Wherever significant quantities of material are handled, it is advisable to provide some type of air cleaning equipment to prevent discharge of the beryllium out of the building. The recommended outdoor level for the general population is that it not exceed 0.01 $\mu g/M^3$.[6]

Plutonium

The handling of plutonium as a powder probably presents more problems than any other known material. The reasons for this may be summarized as follows:

1. Plutonium is pyrophoric.
2. The toxicity of plutonium is among the highest of any known material, being comparable on a weight basis to that of radium.
3. Because of the fact that plutonium is a fissionable material, nuclear safety measures

must be observed throughout the handling procedures.

4. Except during experimental work, plutonium is generally handled in fairly large quantities.

5. It might also be worth noting that depending on the history of the material, plutonium gives off more or less gamma radiation. One authority suggests a maximum limit of 1½ hrs/wk as the permissible hand contact dose. This, however, will vary with the history, and the radiation level should be measured prior to use.

Inasmuch as each of the above hazards tends to dictate limitations in exposure of this material to the atmosphere, the most satisfactory procedure which has been worked out to date for the handling of plutonium is in suitably constructed glove boxes. These glove boxes are pressurized with some type of inert gas, such as argon or helium, and the operator works through double gloves—one glove being directly on the hands, and the other one providing access to the interior of the box. Again, it is advisable to set down certain basic principles which should be considered prior to the design of a system for handling this material. These are:

1. All operations should be carried out in tight enclosures which provide for manipulation by means of arm length gloves, aided by mechanical devices where necessary.

2. Pressure within the box should be below that of the ambient so that in the event of a leak, any leakage will be at least 150 ft/min. The system, however, should be constructed as nearly leakproof as possible.

3. The system should be provided with a dry, inert atmosphere. This is expecially true where powders are handled.

4. Exposure to air must be limited as far as possible because the material may catch fire or explode.

5. Allowance must be made for radiation which penetrates the gloves and thereby limits the time of exposure to personnel.

6. Criteria of nuclear safety should be carefully studied prior to operation.

7. All gases which leave the system should be filtered on exhaust. The filter should be checked and changed periodically to insure no build-up to a critical amount.

8. Rules for safe practice should be adopted in advance, and rigidly adhered to; and the necessary materials, equipment, and personnel for compliance should be provided.

Provision of a facility for meeting the above criteria introduces many unusual technics. Most of these have been worked out and are available in the literature.[7] Some of the items which should be considered are:

1. Purification and drying of the inert gas.

2. Emergency ventilation in the event of breakdown of the system.

3. Means for insuring a pressure differential on the system.

4. Suitable filters for insuring removal of powder material from the circulating gas system.

5. Adequate system for transfer of materials into and out of the system.

6. Choice of suitable glove material.

7. Development of a suitable glove changing technic.

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An attempt was made to establish an animal host of L. autumnalis in the area where outbreaks of "Fort Bragg Fever" had occurred. While this pilot study did not achieve its objective, leptospiral infection among wild animals appeared more prevalent than in other parts of the country. The implications of the findings are discussed.

AN INVESTIGATION OF POSSIBLE WILD ANIMAL HOSTS OF LEPTOSPIRES IN THE AREA OF THE "FORT BRAGG FEVER" OUTBREAKS

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DURING THE SUMMER of 1942 an outbreak of a febrile illness occurred among military personnel at Fort Bragg, North Carolina. There were similar outbreaks during the summers of 1943 and 1944.[1] For convenience, the disease was called pretibial or "Fort Bragg Fever." In 1944, Tatlock[2] recovered an infectious agent from the blood of one of the acutely ill soldiers which caused a mild febrile illness in guinea pigs and rabbits and a fatal disease in hamsters. The agent which was filterable was maintained by passage in guinea pigs, hamsters, or embryonated eggs. It was thought to be a virus but various studies failed to show that it was related to a number of the more common viral and rickettsial agents. The possibility that it might be a leptospire was considered but procedures used at that time did not confirm this idea. In 1957, Gochenour, et al.,[3] reexamined convalescent and immune serums from these patients with antigens from a large number of leptospiral serotypes. They were found to have high antibody titers to Leptospira autumnalis. Subsequently, a leptospiral organism identified as L. autumnalis was recovered from material of the 259th hamster passage of the Fort Bragg agent which represented the 365th passage in guinea pigs, embryonated eggs, or hamsters since original isolation. Thus seven years after the outbreak, Fort Bragg fever was established as a leptospiral infection. Members of the serogroup had not been found previously in the United States.

It was observed during the epidemics that a swampy area of a creek separated the two most heavily infected troop units.[4] This creek flows into a large pond on the main post which was used as a swimming area during the outbreaks. It has not been used for swimming in recent years and is now a mud flat. Drainage from the dairy barn, in use during the epidemic, flows into the pond area. There was no evidence to suggest that leptospirosis had occurred among cows in the dairy herd. The milk was weighed daily and there was no noticeable reduction in production. Abortions occurred only rarely.[5] Isolations of L. autumnalis have not been reported from cattle. This serotype was

first identified in 1925 in Japan and later found in Indonesia.[6] In addition to isolations from human patients, this type has been recovered from rodents including Microtus montebelli, Apodemus spesiosus and Rattus rattus in Japan[6] and from dogs in Malaya.[7]

The possibility of an animal host of this serotype was not investigated during the Fort Bragg outbreaks or after the causative agent was established. With this background, plus the recent incrimination of a variety of wild mammals as hosts of at least seven leptospiral serotypes[8,9] including L. autumnalis[10] in southwest Georgia, the present study seemed warranted. Wild animals were trapped on the Fort Bragg military reservation in all areas, including the section where the human cases of leptospirosis occurred during 1942-1944. Cultural and serological examinations were then performed on the trapped animals in an attempt to isolate leptospires and to detect leptospiral antibodies. Serological studies on the leptospiral strains isolated from these animals and antibodies detected in their serum failed to reveal L. autumnalis but rather indicate the presence of members of two other serogroups which were known only recently to exist in the United States.[8,9] These investigations were made possible by the cooperative efforts of the North Carolina State Board of Health, U. S. Army Hospital at Fort Bragg, the U. S. Fish and Wildlife Service, and the Communicable Disease Center, Public Health Service.

Methods

In October, 1957, the animals were trapped in 19 different areas of this large reservation including the pond area. Steel No. 2 coil-spring traps were used for foxes, raccoons, and opossums and Sherman live traps for rodents. Crackling bait was placed near the large traps and a few drops of scent (fox urine, bile, and glycerin) sprinkled around the traps. Rolled oats, cheese, or peanut butter were used in the rodent traps. The live animals were transported to the Animal Disease Research Laboratory at North Carolina State College in Raleigh the day they were caught or, in a few instances, the next day. At the laboratory the animals were anaesthetized with ether and blood obtained by cardiac puncture. After death the animals were dipped in a 10 per cent cresol solution for 10 to 15 minutes, then necropsied. The viscera was exposed aseptically and three drops of urine obtained by bladder puncture were inoculated immediately into each of three tubes of Fletcher's semisolid medium. Portions of each kidney were removed and placed in sterile mortars. Sterile sand was added and the tissue ground thoroughly. Buffered saline was added in sufficient amount to prepare a 10 per cent suspension and the tissue mixed well. Three drops of the kidney suspension were then inoculated into each of three tubes of Fletcher's medium. Approximately one-half of one kidney from each animal was placed in 10 per cent formalin for histopathological studies. When gross lesions were observed in other organs, portions of these organs were saved also. The kidney sections were stained with the Warthin-Starry and Lillie-Faulkner silver stains.

The blood serums were screened for leptospiral antibodies by the macroscopic slide agglutination test[11] with four pooled antigens representing 12 different leptospiral serotypes. Positive serums were then examined by the microscopic agglutination test with both formalinized and live antigens.

The cultures were kept at room temperature in the dark in Raleigh for one month and examined by darkground microscopy two to three times during this period. They were then shipped to Chamblee where they were incubated at 28°C for another month and examined twice during this period before discard-

ing. Cultures found to contain leptospires were processed for identification by agglutination and agglutinin-absorption procedures previously described.[8] Subcultures were made on all cultures in which organisms other than leptospires were observed and the organisms identified.[12,13]

Findings

A total of 89 animals were cultured, including 41 foxes of three different species, 22 raccoons, three opossums, three rabbits, and 20 rodents of five different species. Kidney suspensions and urine were cultured on all animals with the exception of three cotton rats and a deer mouse that had no urine in their bladders. Of these, all tubes cultured from five animals were contaminated. Leptospires were isolated from 10 (11.7 per cent) of the remaining 84 animals, including five raccoons, three gray foxes, and two red foxes as shown in Table 1. Leptospires have not been reported previously from red foxes in the United States. All isolations were obtained from adult animals of which six were female and four male. These organisms were isolated from the urine of only two of the ten positive animals. When leptospires were observed in the kidney cultures but did not appear in those inoculated from urine, subcultures were made from the urine cultures. It is interesting that leptospires were found in one of these urine cultures only after it had been transferred and incubated for about ten days.

Cross-agglutination studies indicate that two of the cultures isolated from gray foxes and one from a raccoon belong to the L. australis, Ballico serogroup. One of these foxes and the raccoon were trapped in the pond area. The other fox was caught in an area approximately 12 miles away. The remaining seven isolated belong to the L. grippotyphosa serogroup. Identity of one australis strain and one of the grippotyphosa cultures has been confirmed by agglutinin-absorption studies. The seven grippotyphosa cultures grew very poorly or not at all in liquid medium for nearly a year after inoculation. They were maintained by frequent subculture in Fletcher's semisolid medium.

Table 1—Leptospiral Isolations from 84 Wild Animals Trapped at Fort Bragg, North Carolina

Species	Age		Sex		No. Examined	Cultures	
	Adult	Young	Male	Female		Contaminated	Positive
Kit fox	2	1	1	2	3		0
Red fox	13		8	5	13	1	2
Gray fox	25		19	6	25	1	3
Raccoon	18	5	11	11	22	2	5
Opossum		3	1	2	3		0
Cottontail	3		1	2	3		0
Cotton rat	10		1	9	10		0
Cotton mouse	4	1	4	1	5		0
Deer mouse	3		2	1	3	1	0
Golden mouse	1		1		1		0
House mouse	1			1	1		0
Total	80	9	49	40	89	5	10

Table 2—Findings on Wild Animals by Silver Staining, Isolation and Serologigal Technics for Detection of Leptospires and Leptospiral Antibodies

Number	Species	Stained Kidney Section	Kidney Culture	Agglutination Tests
9	raccoon	+	+	+
30	raccoon	−	+	+
37	red fox	+	+	+
38	red fox	−	+	+
40	kit fox	−	−	+
41	gray fox	−	+	+
53	gray fox	−	+	+
62	raccoon	+	+	+
71	raccoon	−	−	+
72	gray fox	−	+	+
79	raccoon	−	+	+
88	raccoon	+	+	+

Histopathological examination of kidney sections revealed leptospiral organisms in three raccoons and one red fox from which L. grippotyphosa was isolated as shown in Table 2. Microscopic lesions were observed in the kidney sections of nine animals that yielded positive cultures and in one animal, a gray fox which had a negative culture. Leptospiral antibodies were detected in serum from this animal. No significant lesions were found in one gray fox from which L. grippotyphosa was isolated or in a kit fox which had a negative culture but showed a positive serologic reaction. The microscopical findings in the ten animals with lesions in the kidneys were similar. The kidneys showed diffused infiltration of lymphocytes, monocytes, plasma cells, and some polymorphonuclear leukocytes in irregular areas in the medulla and cortex. In some areas the cellular infiltration involved the uriniferous tubules and encircled the glomeruli, and in other areas large accumulations of inflammatory cells were seen. Albuminous degeneration of the uriniferous tubules was seen and many of the tubules were distended with hyaline casts and cellular casts. In some tubules clumps of yellowish brown pigment were seen in the epithelial cells. There were scattered areas in the medullary portion which showed hemorrhages and in some cases the renal pelvis contained blood. In four animals tangled masses of leptospiral organisms were seen in degenerated uriniferous tubules.

Macroscopic slide agglutination tests revealed leptospiral antibodies in the serum from 12 animals. Of these, serum from two showed weak reactions and no leptospires were isolated even though subcultures were made. Animals found to harbor leptospires were widely scattered over the 19 trapping areas with one each in eight areas and two in the pond area. It should be noted that 19 of the 89 animals were trapped near the pond representing the largest number obtained from a single area.

Microscopic agglutination tests with live antigens performed on serums from the seven animals yielding L. grippotyphosa strains revealed titers ranging from 1:128 to 1:4,096 against L. grippotyphosa, Andaman antigen. In contrast, titers to L. australis (Ballico) were considerably lower (1:64) in two of the animals harboring this type and not detected in serum from the third, a raccoon. In view of this, serums from these three animals were tested also with antigen prepared from two other types in the australis serogroup, Esposito and Fudge. The raccoon serum showed a titer of 1:64 to Esposito and 1:32 to Fudge. The other two animals showed lower titers than when tested against L. australis or no reaction at all. Serum from one kit fox showed antibodies to L. ballum in a 1:128 dilution and one raccoon reacted in a dilution of 1:256 with L. pyrogenes antigen. Leptospires were not isolated from these two animals. A summary of serological findings on serums and leptospiral isolations is presented in Table 3.

Discussion

While the primary objective of this pilot study, to establish an animal host of L. autumnalis in the area of the "Fort Bragg Fever" outbreaks, was not accomplished, leptospiral infection among the wild animal population appeared more prevalent than in other parts of the country. During a recent study of 820 wild mammals of 14 species examined in southwest Georgia, leptospires were isolated from 44 (5.4 per cent)[9] compared to ten (11.7 per cent) from 84 animals at Fort Bragg. The ten animals on the Fort Bragg reservation found to harbor leptospires were trapped in nine widely separated areas.

Summary

A total of 89 wild animals including 41 foxes, 22 raccoons, three opossums, three rabbits, and 20 rodents were trapped over a wide area of the Fort Bragg military reservation including the section where human cases of leptospirosis occurred during 1942-1944. Examinations on these animals were designed to detect leptospiral infection by isolation of the organisms, demonstration of leptospires on silver stained kidney section and to detect the presence of leptospiral antibodies.

Leptospires were isolated from ten (11.7 per cent) of the 84 animals on which cultures were considered satisfactory. All tubes inoculated from kidney tissue and urine of the remaining five animals were contaminated. Histopathological study of silver stained kidney sections revealed leptospires in only four of the culturally positive animals and on none that yielded negative cultures.

Agglutination and agglutinin-absorption studies indicate that three of the isolations belong to the L. australis Ballico group and seven are members of the L. grippotyphosa serogroup. Gray foxes have not been reported previously as hosts of members of these two serogroups

Table 3—Summary of Serological Findings on Serums and Leptospiral Strains Isolated from Wild Animals Trapped at Fort Bragg, North Carolina

Number	Species	Microscopic Agglutination Tests*							Preliminary Identification of Leptospires
		ballum	grippo.	pyro.	aut.	australis	Espos.	Fudge	
9	raccoon		2,048						L. grippotyphosa serogroup
30	raccoon		4,096						L. grippotyphosa serogroup
37	red fox		2,048	—	16				L. grippotyphosa†
38	red fox		2,048						L. grippotyphosa serogroup
40	kit fox	128							Culture negative
41	gray fox		128						L. grippotyphosa serogroup
53	gray fox					64	—	16	L. australis serogroup
62	raccoon		1,024						L. grippotyphosa serogroup
71	raccoon		—	256		—			Culture negative
72	gray fox					64	32	32	L. australis serogroup
79	raccoon					—	64	32	L. australis†
88	raccoon		2,048						L. grippotyphosa serogroup

* With living antigens.
† Confirmed by agglutinin absorption.

pyro. = pyrogenes
aut. = autumnalis

Espos. = Esposito
grippo. = grippotyphosa

in the United States, nor has the red fox been reported to harbor leptospires previously in this country.

Agglutination tests on serums from these 89 animals revealed titers in the culturally-positive animals ranging from 1:64 to 1:4,096 against antigens prepared from stock strains of the L. australis and L. grippotyphosa serogroups with one exception. Serums from two animals showed low grade reactions with L. ballum and L. pyrogenes antigens by the microscopic agglutination test.

Leptospires were obtained from animals trapped in widely separated areas of the reservation indicating a rather wide distribution. Although L. autumnalis was not found in this study, it must be remembered that less than 100 animals were examined. In view of the rather high prevalence of leptospires in wild animals in the Fort Bragg area as revealed by this pilot study, it is felt that (1) examination of additional animals is indicated and (2) that additional serotypes would be found.

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As part of the longitudinal study on the development of cardiovascular disease which is being conducted at Framingham, Mass., attention is being given to a variety of specific factors. This report presents evidence on national origin, educational status, and smoking and drinking habits.

SOME FACTORS ASSOCIATED WITH THE DEVELOPMENT OF CORONARY HEART DISEASE

SIX YEARS' FOLLOW-UP EXPERIENCE IN THE FRAMINGHAM STUDY

Thomas R. Dawber, M.D.; William B. Kannel, M.D.; Nicholas Revotskie, M.D.; Joseph Stokes, III, M.D.; Abraham Kagan, M.D.; and Tavia Gordon

AT FRAMINGHAM, MASS., the National Heart Institute has been conducting a prospective longitudinal study of factors related to the development of cardiovascular disease. A random sample consisting of two-thirds of the adult population, aged 29-62 years, was chosen for study. The sample size and age distribution were chosen to provide an adequate group of persons to be observed 20 or more years in which there would be a sufficient number of susceptible individuals. It was possible to bring in for examination 68.6 per cent (4,469) of the 6,510 selected. A group of 740 volunteers was added to supplement the initial group of respondents for prospective study (Table 1).[1] Follow-up of this group has been carried on for four biennial examinations representing six years of observation. A previous report has confirmed that certain factors are associated with increased risk of development of coronary heart disease.[2] Most important of these are hypercholesterolemia and hypertension. Many factors appear to be related to the development of coronary heart disease. The exact interplay of these factors and a possible common denominator important in the pathogenesis of coronary heart disease remain to be determined. No one factor has been clearly demonstrated to be essential.

Table 1—Composition of Framingham Study Group

	Number of Persons		
	Total	Men	Women
Random Sample	6,510	3,090	3,420
Respondents	4,469	2,024	2,445
Respondents free of CHD*	4,393	1,976	2,417
Volunteers free of CHD	734	307	427
Total free of CHD (Population at Risk)	5,127	2,283	2,844

* Coronary heart disease.

Table 2—Evidence of New Coronary Heart Disease in Framingham Study Group—Six-Year Follow-Up

	Number of Events		
	Total	Men	Women
All New Coronary Heart Disease*	186	125	61
Myocardial Infarction (ECG and Clinical Evidence)	71	57	14
Myocardial Infarction by ECG only	9	7	2
Sudden Death			
With preexisting evidence of CHD	9	9	—
Without preexisting evidence of CHD	18	15	3
Angina Pectoris	79	37	42

* The categories are mutually exclusive. Assignment was made according to the following priority: 1. Sudden death; 2. Myocardial infarction; 3. Angina pectoris.

At Framingham many of the factors believed to be important in the development of coronary heart disease are under study. This report is concerned with the geographical distribution of the disease within the town, the educational status and national origin of the subjects, and their smoking and drinking habits.

In order to assess factors related to the subsequent development of coronary heart disease, all persons exhibiting evidence of the disease on their initial examination were excluded from the population at risk. Criteria used for establishing a diagnosis of coronary heart disease have been defined in a previous publication.[2] In brief, they include (1) a definite history and/or definite electrocardiographic evidence of myocardial infarction; (2) definite angina pectoris; and (3) sudden death under circumstances suggesting coronary heart disease. The diagnostic categories comprising coronary heart disease occurring in the first six years of follow-up are specified in Table 2.

Socioeconomic Factors

The data on socioeconomic factors are very limited. In order to assure as complete a clinic follow-up as possible, the Framingham Study has avoided home interviews and has kept the clinic examination as short and as inoffensive as is consistent with the main purposes of the study. Only three socioeconomic factors —place of residence, education, and nativity—are reported. The study is restricted to males age 45-62 at time of entry because the incidence of coronary heart disease in the other age and sex groups studied was too low for evaluation.

Place of Residence

The residents of certain areas of Framingham differed from others within the town with respect to economic status, national origin, and education. Framingham was divided into eight voting precincts. No precise characterization of their socioeconomic features is available.

Table 3—Six-Year Incidence of Coronary Heart Disease by Precinct—Framingham Men, 45-62

Precinct	Population at Risk	New CHD	
		Observed No.	Expected No.*
All precincts	1,037	94	94.0
Precinct 1	198	14	17.5
Precinct 2	107	3	8.7
Precinct 3	174	19	15.7
Precinct 4	115	14	11.2
Precinct 5	79	8	7.7
Precinct 6	163	16	15.3
Precinct 7	108	10	9.3
Precinct 8	92	10	8.6
Outside Framingham	1	—	

* Expected numbers are calculated from the incidences in five-year age groups for all men 45-62 and the population at risk in five-year age groups for the specified precincts.

There are some less precise measurements as well as some subjective impressions of these characteristics which were studied.

One of the precincts in the town has had a lower incidence of coronary heart disease than the others (Table 3). Of 107 men in the age group 45-62 in Precinct 2, only three have developed new coronary heart disease compared to an expected number of 9 (8.7). This precinct was geographically distinct from the rest of the town. It was an area of working people, who owned small homes or occupied multiunit rental property clustered about a rug factory which had been operating at the same site for nearly 100 years. This industry employed approximately a third of the men in the study from that precinct. A number of families have been living in the area for many generations. Until 1875 this precinct was a separate town and still retains the place name. The educational level of the residents was somewhat lower than for the study group as a whole. There were fewer male graduates from high school and college. Distribution by national origin was little different from Framingham as a whole. At present there is an insufficient number of cases of newly developed disease to determine the meaning of this observation.*

Education

The data from the six-year follow-up show a significant trend in the incidence of coronary heart disease in relation to educational level (Table 4), the incidence being less at higher levels. This association was not demonstrated at the time of the four-year follow-up. The educational level was related to age, younger men having a higher educa-

* Statistical note: Tests of extreme incidences are based on the tables of Halperin, et al.[3] Tests for trend are based on a procedure prepared by Edwards.[4] Statistically significant refers to a probability less than 5 per cent.

Table 4—Six-Year Incidence of Coronary Heart Disease According to Schooling—Framingham Men, 45-62

Schooling	Population at Risk	No.	Coronary Heart Disease Observed Rate/1,000	Coronary Heart Disease Expected* Rate/1,000
Total	1,037	94	90.6	90.6
None	12	3		
4th grade or less	71	6	113.5	99.3
5th, 6th, and 7th grade	90	6		
Grade school graduate	250	33		
High school, not graduate	160	14	87.5	83.9
High school graduate	177	13		
Business college	43	3	72.7	82.2
College, not graduate	72	5		
College graduate	76	2	62.2	83.5
Postgraduate	45	5		
Unknown	41	4	97.6	106.2

* Expected rates are calculated from the incidence in five-year age groups for all men 45-62 and the population at risk in five-year age groups for the specified schooling categories.

Table 5—Six-Year Incidence of Coronary Heart Disease According to National Origin—Framingham Men 45-62

National Origin	Population at Risk	Coronary Heart Disease No.	Coronary Heart Disease Observed Rate/1,000	Coronary Heart Disease Expected* Rate/1,000
Total	1,037	94	90.6	90.6
Foreign-born				
Total	320	26	81.2	96.8
Italy	145	14	96.6	105.0
Other	175	12	68.6	90.1
Native-born				
Total	717	68	94.8	87.9
Great Britain	226	14	61.9	90.9
Ireland	151	19	125.8	93.6
Other	340	35	102.9	83.3

NOTE: National origin is defined by country of birth of parents and grandparents. For example, for a person to be classified as "native-born Great Britain," at least one of these antecendants must have been born in Great Britain and the others born in the United States.

* Expected rates are calculated from the incidence in five-year age groups for all men 45-62 and the population at risk in five-year age groups for the specified national origin categories.

tional level than the older men. When correction was made for this bias, the trend remained but was no longer statistically significant. Closer examination of the data indicates that the excess incidence for the group of men without any high school education is confined to those graduated from grade school and is not evident in the group whose formal schooling ended earlier. The grade school graduate in Framingham is generally the native-born American whose ancestors came from Great Britain or Ireland. The Framingham men who did not complete grade school were almost all Italian immigrants. Therefore, these data apparently suggest that in Framingham a native-born American male, 45-62 years of age and of limited education, has a higher than average risk of developing coronary heart disease.

National Origin

There are no indications of any association between national origin and the risk of coronary heart disease (Table 5). The one large distinct ethnic group, the Italians, had almost the same incidence of coronary heart disease as the rest of the population studied. There is an indication, not statistically significant, that the foreign-born Italian has a slightly lower incidence of coronary heart disease than the native-born, but since they represent different generations, it is difficult to make a direct comparison.

Smoking

A number of large studies have shown a relationship between smoking and mortality from coronary heart disease.[5,6] The data from these studies have been derived from death certificate material and consequently did not include coronary heart disease manifested simply as angina pectoris and were not restricted to new disease. Analysis of the four-year follow-up at Framingham, which showed no relation between smoking and coronary heart disease, was based exclusively

on new disease, nonfatal as well as fatal, and was therefore not strictly comparable with the findings from the mortality studies.

For purposes of comparison with these other studies, the six-year follow-up data are analyzed differently. Starting from the same population at risk, two types of new events are considered: (1) angina pectoris and (2) myocardial infarction and sudden death. These two categories of new coronary heart disease are also considered separately for the other factors treated in this paper (precinct, national origin, education, and drinking) but since the effects shown are indistinguishable for the two categories, they are combined in the final tabulations. For cigarette smoking, however, the case is different. Study of the relation of smoking to the development of all new cases of coronary heart disease continues to show lack of association, bearing out the finding of the four-year follow-up.[1] When, however, a separate analysis is made of those cases manifesting more severe degrees of coronary heart disease, (excluding those with angina pectoris alone) an association of risk with cigarette smoking seems to emerge, the risk rising with the number of cigarettes smoked per day. While these differentials are not statistically significant, they are in the same direction as the findings of the larger mortality studies.

In addition, the mortality experience in six years' follow-up is also presented. For this purpose the total Framingham Study group is considered the population at risk, and all deaths from coronary heart disease are enumerated regardless of clinical status at entry. These data do not evidence statistical significance for a trend relating incidence with amount of cigarette smoking, if the broad age group 45-62 is considered as a whole, but they do become significant when allowance is made for the fact that heavy cigarette smoking is more common among younger men, with a lesser risk of coronary heart disease. It is our opinion that these data are based on too few cases of coronary heart disease to indicate a definite association with smoking; but our findings are consistent with those involving larger populations.

The mechanisms by which smoking might be involved in the production of coronary heart disease remains obscure. There is no experimental evidence that smoking damages the healthy blood vessel.[7] It is possible that smoking is associated with some other factor which in turn may be important in the pathogenesis of the disease. At Framingham there is some evidence that smoking habits are associated with other characteristics (Table 7). Serum cholesterol levels tended to be slightly higher and relative weight slightly lower among cigarette smokers than among nonsmokers. There is evidence of a gradient of cholesterol with increasing amount of cigarette smoking in the younger men. These findings agree well with those previously reported by Gofman, et al.[8] However, men who had quit smoking also had an elevated serum cholesterol on the average. The findings with respect to relative weight, while they indicate significant variations of weight with smoking habits, do not show any clear-cut pattern. In general, weight is lower in cigarette smokers than nonsmokers except in the case of heavy cigarette smokers in whom the weight approaches that of the nonsmokers. The Framingham data indicate no association of smoking habits with blood pressure levels. All these relations were evaluated on the basis of data tabulated in five-year age groups but for convenience in presentation the data are given here in broader age groups.

The most striking association with cigarette smoking noted is the amount of alcohol consumed. A greater consumption is found with increasing use of tobacco (particularly in the younger

Table 6—Six Years' Incidence and Mortality from Coronary Heart Disease According to Smoking History—Framingham Men, 45-62

Smoking History	Incidence of new CHD: Population at Risk Number	Mean Age	Number of Events Total	AP	Other	Rate/1,000 Total	AP	Other		CHD Mortality*: Population at Risk	Deaths	Rate/1,000
Total	1,037	52.6	94	32	62	90.6	30.9	59.8	(39.8)	1,083	38	35.1
Never smoked	141	53.0	14	7	7					143	3	
Lapsed	115	53.6	8	2	6	83.1	32.3	50.8	(63.2)	121	1	24.6
Cigar or pipe only	177	53.0	14	5	9					184	7	
Smoked cigarettes	594	52.3	57	18	39	96.0	30.3	65.7	(57.3)	624	25	40.1
less than 10/day	79	53.5	3	—	3	38.0	—	38.0	(65.2)	82	2	24.4
10/day	39	52.8	2	1	1					41	1	
11–19/day	56	53.0	9	3	5	105.3	42.1	63.2	(62.3)	61	2	29.4
20/day	238	52.4	21	5	16					247	11	
21–39/day	116	51.2	12	7	5	104.8	33.3	71.4	(54.6)	124	5	45.5
40 or more/day	66	51.3	11	2	9					69	4	
Unknown	10	52.8	1	—	1					11	2	

NOTE: The rates shown in parentheses for incidence of new CHD other than AP are expected rates calculated from the incidence in five-year age groups for all men 45-62 and the populations at risk in five-year age groups for the specified smoking categories.

* Regardless of clinical status at entry.

Table 7—Mean Levels of Some Characteristics in Relation to Smoking History—Men in Framingham Study Group by Age

Tobacco History	Number of Persons 29–44	45–59	Framingham Relative Weight* 29–44	45–59	Serum Cholesterol mg per 100 ml 29–44	45–59	Systolic Blood Pressure mm Hg 29–44	45–59	Alcohol Consumed (oz/mo) 29–44	45–59
Total	1,253	1,008	101.2	102.0	223.1	229.3	133.1	140.9	24.0	23.8
No tobacco used	149	131	103.4	106.2	216.1	228.3	133.8	143.0	10.2	9.2
Cigarettes	874	589	99.9	100.1	224.8	229.5	132.5	140.3	27.7	27.4
(Less than 10/day)	75	76	100.6	100.3	217.4	229.1	134.7	144.0	23.4	26.8
10–19/day	134	95	96.8	103.0	221.1	230.0	129.4	141.6	24.0	15.5
20–39/day	551	350	99.5	98.8	225.8	227.8	132.2	138.9	25.5	28.1
40 or more/day	114	68	105.2	103.0	229.0	238.5	136.1	141.5	46.9	43.1
Pipes or cigars only	128	166	106.7	102.9	214.9	227.1	135.0	141.9	20.0	22.5
Lapse	94	112	102.2	104.8	229.2	233.1	135.6	140.1	18.0	23.4
Unknown	8	10	91.1	108.8	193.0	184.5	120.8	136.4	—	—

NOTE: These characteristics are as measured on Exam I, except that cholesterol measurements for Exam II were used for case numbers below 4,000 and the alcohol histories are as of Exam II.

* Framingham Relative Weight (FRW) = $\frac{\text{Observed Weight}}{\text{Median weight for height and sex category x 100 in the Framingham Study}}$

Table 8—Alcohol Consumption in Relation to New Coronary Heart Disease—Framingham Study Group by Age and Sex: Six Years' Incidence

Age and Sex	Number of Persons		Mean Alcohol Consumption (oz/mo)	
	Population at Risk	New CHD	Population at Risk	New CHD
Men				
30–39	754	15	23.3	23.8
40–49	703	27	24.8	29.6
50–59	555	63	23.4	23.2
60–62	60	9	22.9	12.1
Women				
40–49	890	17	6.5	1.3
50–59	737	36	4.8	2.1
60–62	54	4	7.4	1.4

NOTE: None of the means for new CHD differ significantly from the population means.

age group). Heavy smokers (two or more packages a day) showed the greatest consumption of alcohol in both age groups. Alcohol consumption per se, however, does not show any relation to the development of coronary heart disease (Table 8). Women who develop new coronary heart disease have lower alcoholic consumption than expected. While this is suggestive, it could represent a sampling fluctuation.

Summary

Several factors have been analyzed for possible association with the development of coronary heart disease. During the six years of follow-up of the population there was an inverse association with educational status, the incidence of new CHD being less at higher educational levels. There was no association between national origin and the risk of CHD. A suggestively low CHD incidence was noted in one of the eight Framingham precincts. This precinct differed from the others in some respects, but no explanation of this finding can as yet be offered.

Smoking was associated with an increased incidence of nonfatal myocardial infarction and of death from CHD in men 45-62. It was not associated with an increased incidence of angina pectoris. Cholesterol levels were higher among cigarette smokers than among nonsmokers and higher among those who had smoked and stopped than among those who had never smoked. Neither relative weight nor blood pressure showed a similar association with smoking.

Alcohol consumption per se was not associated with CHD although heavy alcohol intake was associated with heavy smoking.

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Cardiovascular Disease Nursing

Nurses in leadership positions in a variety of fields (nursing education, nursing supervision, administration, or consultation) are offered an opportunity to deepen skills in the clinical area of cardiovascular disease by the School of Public Health and the School of Nursing, University of Minnesota. The experience to be provided in the three-month program includes concentrated study of cardiovascular conditions, care of medical and surgical patients in hospital and home settings under faculty guidance, and some introduction to research in related fields.

The course will be given during the winter quarter (January-March) 1960. Special training funds are available for students. Inquiries should be directed to the School of Public Health, 1325 Mayo, University of Minnesota, Minneapolis 14, Minn.

An important yet largely unexplored area of health work is health education in industry. What considerations should underline program activities in this area? This question is considered from a variety of viewpoints in the following article.

HEALTH EDUCATION IN INDUSTRY—PRACTICAL CONSIDERATIONS FOR ACTUAL PROGRAMS IN INDUSTRY

S. S. Lifson, M.P.H., F.A.P.H.A.

Need for Individual Action on Health

MEDICAL SCIENCE has made great strides in the last fifty years in combating disease. Each year sees the discovery of some new weapon in the fight to bring under control the disease conditions with which man is afflicted.

Oddly enough, while we have done a great deal about disease and illness, we have done much less in attaining and maintaining optimal health. Perhaps this is because reaching and maintaining a reasonable level of good health is so largely an individual matter. We can fight some diseases on a communal basis —by disposing of sewage properly, or by investing money in research projects against specific germs or by finding and treating carriers of communicable disease. But to keep individual human beings healthy in other respects requires the initiative and cooperation of those individuals.

So far, at least, we seem to have failed to impress all or most individuals with the importance of achieving and maintaining their own bodily health. Many of us prefer to let things slide in this respect until we are actually sick. Then we proudly apply the knowledge about illness which we have accumulated, often when it is too late.

We apply preventive maintenance to our cars—changing the oil at regular intervals, checking the spark plugs after 10,000 miles, switching the tires regularly, and so on. We paint our homes once every three years, if we can manage it, and clean the drains of leaves every spring. Preventive maintenance is widely recognized as a superb idea everywhere—at home, on the road, in business—except for our own bodies. For some reason we are content to operate our bodies for years and years at full capacity—and above capacity—until something lays us low.

Another characteristic attitude which adds to the problem is the tendency to avoid professional medical advice as long as possible. We are a country of "do it yourself" addicts, even when it comes to health. As a result, manufacturers of patent medicines have a field day. Self-diagnosis and treatment of bodily ills, encouraged by blasting advertising slogans offering highly questionable advice,

are the order of the day. In 1957, retail outlets sold packaged, advertised medicines to the extent of $1,380,000,000.

Importance of Health to Industry

It need hardly be pointed out that this question of health has tremendous significance for industry. Ninety per cent of absenteeism comes from sickness and accidents outside the plant.

According to estimates, each working day sees 2,000,000 employees away from their jobs because of sickness. Not all this illness could have been prevented, but it is reasonable to assume that common-sense hygienic living would prevent a good part of it.

There are at present five and a half million people in the United States who are suffering from some long-term illness. One and eight-tenths million are between 45 and 65, and 1.4 million are under 45 years of age. Think of the enormous drain on our economy and the tremendous loss of trained and skilled manpower these figures represent.

And what about the decreased efficiency which results from conditions which do not necessarily show up in the absenteeism statistics: poor diet, fatigue, alcoholism, and poor human relationships at home and in the plant? They affect the productivity of the worker; they lead to accidents; they result in waste of time and materials; and they disrupt morale. In the long run, these people who come to work may represent a larger drain on industry than those who stay home.

Problems Which the Individual Faces in Maintaining His Health

Why is it that, despite our great strides in learning how to cope with illness, we have advanced so little in achieving and maintaining reasonably good health? As I see it, it is because such a tremendous part of the responsibility rests squarely on each individual. Let us take a look at some of the things the individual ought to be doing and thinking.

In the first place, one must both know and do. Knowing is not enough without the doing. For example, one must eat a balanced diet. Most of us weigh more than we should. Practically everyone probably knows the general rules about weight-causing calories, but do we avoid the foods that contribute to overweight—potatoes, bread, cake, carbonated drinks, alcohol? Do we have the will power to cut down our portions? It is not easy.

The individual must learn to strike a balance among work, rest, and play. Somewhere along the line we must stop burning the candle at both ends and recognize that sleep and rest are just as much a necessity as eating and drinking, if the body is to regenerate itself.

The individual must practice good personal hygiene. Hand washing, bathing, covering coughs and sneezes, not using personal articles used by others—these may seem like trivial things taken singly, but as health habits they are vital to avoiding disease. And, too, many people do not have them.

The individual must learn something about his own mental health and how to maintain it. Some of us have to learn how to get along with others. Some have deep-seated problems which complicate our relations with other people, both in the family and at work. Some have anger and resentments which may result in mistakes and accidents.

Oddly enough, the promise of a shorter work week providing more leisure time for recreation does not bode well for mental health. On the contrary, some experts look forward to an increase in problems. What we do in the way of recreation depends on two things: our own inclinations and what is socially acceptable in our circle. Thus, if most of our friends find their outlet for tensions at the corner bar, we will most likely

join them. On the other hand, if a creative activity, such as music, woodworking, painting, and the like is acceptable, we may very well make constructive use of our leisure time.

Man cannot long be idle without deteriorating. What working people do after work hours may have a profound effect on their productivity during the working day. Other future developments, such as the advance of automation, may have equally important effects. With automation, for instance, the job may become less complex and thus less of a challenge and less satisfying to the worker. How well his full capabilities are being put to use on the job may have a definite bearing on how the worker looks at himself.

Finally, the individual must learn to discriminate between poor and good health advice. Is he going to succumb to the blandishments of the advertisers or is he going to seek competent medical advice? Will he accept the medical folkways of his neighbors, friends, and relatives or will he go to a doctor or clinic? How will he decide with regard to the current talk about cigarette smoking and lung cancer?

All these things the individual must know and do for himself. In most instances, no one can do them for him. But what we can do, we who accept responsibility as community leaders and educators, is to try to influence for the better what the individual thinks and feels about his health, so that he may possibly do what is best for himself as well as the community.

How we think and feel about health is in part dependent upon our early experiences at home and in school. As things go today, are these early experiences for most of us an adequate preparation for a healthful adult life? In my opinion, they are not. In the ever-growing field of health, which is so complex in regard to both content and motivation, past schooling and home experience are far from enough. We must recognize the need for continuous adult education for healthful living.

Industry's Role in Health Education

How much of such adult health education can industry do, assuming that it is willing to accept a share of the responsibility? There are several possibilities, in my opinion, some of them already widely accepted and put into practice by industrial leadership.

First—and this is one of those which are widely practiced—is the imparting of health information to employees. For example, many plants conduct extensive programs, using bulletin board posters, leaflets, articles in plant newspapers and magazines, films, talks, and exhibits.

Since 1945 the National Tuberculosis Association has been producing a monthly series of posters and leaflets on a wide variety of health subjects. These are intended chiefly for placement on the bulletin boards and in the literature racks of industry. It has been our hope, in producing these posters and leaflets, to draw attention to various health subjects which might be of interest to the worker.

Of course, health information is not quite the same as health education. In fact, it is only a small part of it. Whether a poster or leaflet has any meaning for the individual depends on whether he has a particular need for the information at the moment. Unless we are faced with an immediate need for it, only rarely do we apply the facts to ourselves. We merely push the information into some deep recess of our minds and go about our business as usual.

Second, and more effective—and this, too, is a concept now fairly well accepted—is making use of the educational values inherent in a good medical department. Many industries have such departments. Their development is of long standing, and from the first they

have accepted as a major task the creation of the knowledge and conditions which contribute to the health and safety on the job of workers in all kinds of industry.

In a statement prepared by the Council on Industrial Health of the American Medical Association, as published in the J.A.M.A. for July, 1957, a section on "Health and Safety Education" says:

> An occupational health program should promote the education of employees in matters of personal hygiene and health and encourage the use of safeguards provided to protect against any hazards to health which may be inherent in their jobs. . . . Health and safety education involves the cooperative efforts of health, safety, and operating personnel. Such education should include not only the encouragement of habits of cleanliness and orderliness but also instruction in collaboration with the employee's immediate supervisor in safe work practices. . . . Employees should be encouraged to participate in the planning and conduct of health education activities and to make full and effective use of occupational health services and facilities available to them.

Many industries do these things. Of course, how broad the scope of the health education resulting from these set-ups—how far it extends beyond the bounds of mere safety rules—varies from industry to industry and plant to plant. Furthermore, the effectiveness of the education imparted to individual employees depends to an enormous degree on the amount of responsibility accepted by the medical personnel involved.

A good medical department manned by a conscientious doctor and nurse can do a great deal of educating when employees visit the health facility. In such cases, it is up to the individual in large measure as to how often and how seriously he seeks out the medical help and advice available to him at work. It happens, probably, only when he needs help badly.

But industry has also accepted a more active role for its medical departments. With preemployment examinations and periodic health maintenance examinations added to emergency medical care in the plant, the medical personnel have many more opportunities to reach the employees and to influence their knowledge, attitudes, and perhaps even their health behavior. Face-to-face discussion between nurse and employee or doctor and employee allows the professional person—if he will seize the opportunity—to delve to some extent, and to get at the questions and problems, real or imaginary, which the employee may have. If the nurse and physician will, they can provide information and also motivate the employee to act on the advice given.

There are certain necessities for the effectiveness of this procedure. In the first place, it takes time and know-how on the part of the medical people. The language used must be understandable to the employee, and the advice given must be practicable. It must be such that he can act upon it. If he needs help in carrying out the advice, the nurse or doctor should be in a position to recommend the outside agencies in the community which can help, and perhaps even arrange that help for him. A knowledge of community resources and facilities is important in this situation.

The third possibility I should like to point out for health education by industry involves foremen and supervisors. The AMA statement just quoted mentions the employee's immediate supervisor in connection with "safe work practices." There is a growing body of opinion which sees the possible role of the foreman or supervisor as much broader than that.

After all, these are the people within the plant who come in daily contact with the employee. They know what the individual's normal behavior is and with some help can detect many deviations from the normal. Foremen and supervisors at least can tell when an employee is troubled, when he is not his usual self. A word at the appropriate time may get the employee to avail himself of the

services of the plant nurse or physician.

Even in small work establishments without medical departments, foremen and supervisors can be alert to changes in an individual's normal health behavior. From then on the matter is not so simple. How to provide some type of occupational health supervision to employees of small establishments is one of the major problems we face today in industrial health. A government agency has estimated that only 20-25 per cent of our working force are reached by health and medical services in their place of employment. More than 75 per cent of the working force in small plants have virtually no health maintenance services.

With the fourth possibility on my list we get into a wider field, one relating to the community around the industrial plant and its possible contribution to the health education of the workers in the plant. We also get into a field where less has been done, where potentialities are great, and where some experimental efforts have been made to uncover the means for realizing those potentialities.

To start with the simplest and most common plan, employers can invite community health agencies to come into the plant to put on programs. An x-ray and education program by the local TB association and health department may fit the needs of the employees very well. Tuberculosis associations have had an active interest in the health of the worker. Largely through the efforts of local associations, thousands in industry each year receive x-rays of their chests for the detection of tuberculosis. In promoting such industrial x-ray surveys, TB associations also conduct educational programs to bring the workers in to participate in the x-ray program. Largely through these efforts, the x-ray of the chest is now standard practice in some industries, which willingly provide facilities for such x-rays. Similarly, programs for detecting other diseases and the educational programs of organizations concerned with them can often fit usefully into an industrial setting.

It should be mentioned that programs conducted by outside agencies do not always command the full interest of employees and management. The programs may turn out to be of only general interest.

My fourth suggestion is therefore not simply to invite in outside program makers, but to set up a project in cooperation with community agencies which requires a little more thought and effort.

We in the National Tuberculosis Association have had some experience in this respect and can, I believe, demonstrate some workable solutions. That a disease-interested agency such as ours has an interest in working for the health education and health maintenance of industrial workers should not be surprising. We realized long ago that the general health improvement of all the people would in the long run have a salutary effect upon the control of tuberculosis.

Through conferences, interviews, consultations, and demonstrations, we in the national group have tried to stimulate local TB associations to explore different ways of meeting the health education needs of industrial workers. We have tried particularly to develop the role of a voluntary health agency like ours in bringing to industrial employees a program based on their own health needs and interests, rather than on any special interest of our own.

In several experimental programs conducted in different parts of the country, it has been shown that an effective health education program can be presented which will have meaning for both employees and management. The first requirements, we found, are that the program should be planned with the help of a representative group from within the industry or plant, and that it should be based on the expressed health interests of the employees concerned.

In Newburgh, N. Y., our local execu-

tive director met with representatives from the various plants in the community. These representatives agreed to do something constructive about health education for their employees. The first step was to form in-plant committees to discuss the problem.

These in-plant committees were representative of all elements within the plant. Through questionnaires and interviews they sought to determine the actual, specific health interests of their own employee group. They found that the workers were interested in such things as diet—what to put into the lunch box—what to do about sore feet, back pain, the common cold, and other very specific matters. Meetings were then organized on these subjects. Some were on company time and property; some were in the plant on the employees' time; some were in the evening and located in the community so that wives or husbands of employees could attend.

In Newburgh the executive of the tuberculosis association provided the rallying point for the program. She also took much of the responsibility in working with the in-plant committees, always reporting back to the over-all committee of community industry representatives. In practice, the other community health agencies were brought into the program when the specific interest expressed by the employees fell within the program interest of the health agency. The TB association provided an over-all program service. The major difficulty of this approach, we found, is that it takes a great deal of someone's, or some group's, time and devotion to carry it through.

We had a similar experience in Detroit-Wayne County. Because of the size of the industrial group tackled here, a special worker was employed for the project. In addition to the effort with individual industries to develop programs based on the health interests of their employees, a community-wide Industrial Health Education Conference was organized. Key personnel in industry took part. This conference has become an annual event, similar to the Northwest Industrial Health Conference.

My fifth suggestion as to what industry can do to help educate its employees to reach and keep a state of good health is broader still. What is done within industry, itself, in the plant, and directly with the plant's employees, is very important. But the real responsibility for health education of our citizens rests with the community, with the official agencies, with voluntary agencies, and with all responsible leaders.

Certainly, industry regards itself as a part of that responsible leadership. In view of its special interest in the health and welfare of the enormous proportion of the community members who are its employees, it is an eminently practical suggestion that industry take a prominent role in developing health education in the community as a whole, participating in that effort with all the other agencies involved.

Labor unions have moved in the direction of such recognition of their responsibility for community leadership, with particular reference to health education. A development of the past few years has been the increased interest shown by the AFL-CIO through its Community Services Committee. I understand that trial programs in community health education are being organized in a few places, with the help of the American Medical Association, as a step toward learning what can be done to reach union members as well as others in the community with health information.

More experimental work will take place soon in which the NTA will cooperate with the AFL-CIO Community Services Committee to select a community in which an effort will be made to develop a health education program for union members within the framework of the union itself.

Health conditions in the community

affect employees just as do health conditions in the plant. For greatest benefit to itself and to its workers, therefore, industry must become interested and concerned with all conditions in the community which affect health. It must be willing to participate in community planning and community action which are aimed at bringing about better health for all.

How to educate the adult for healthful living is a complex and difficult problem. Solutions will undoubtedly be found, but it will take considerable experimentation and thought on the part of a large number of agencies and groups. Although medical science has made tremendous strides, the full benefit of these remarkable advances will not come to flower until each of us has been educated to know and practice the rules by which we can carry out our responsibility for our own health, that of our families, and that of the community.

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Denver Center Epidemiology Course

A course in Applied Epidemiology is offered primarily for physicians who investigate disease outbreaks or are responsible for such investigations by the Communicable Disease Center, Public Health Service, at Denver. This four-day course, November 16-20, serves both as refresher course for the experienced health administrator and as an introductory course for the physician new to public health. Emphasis is on the use of epidemiological technics in the solutions of problems in the preventable disease field. Lecture-discussion sessions, and audiovisual aids and particularly group discussions, seminar-type presentations, and panel discussions are used.

Further information and application forms from: Chief, Training Branch, Communicable Disease Center, Public Health Service, 50 Seventh Street, N.E., Atlanta 23, Ga., or Public Health Service, First National Bank Building, Denver 2, Colo.

The need to provide enough food for all the people of the world is a basic public health problem today. The current situation is well described in the following symposium—both what is being done and what remains to do.

MEETING THE CHALLENGE OF FEEDING THE WORLD

Wilhelm Anderson, Ph.D.; Cyrus French, Ph.D.; Nevin S. Scrimshaw, M.D., Ph.D., F.A.P.H.A.; and Jean W. McNaughton

THERE ARE no reliable statistics on the actual number of people suffering from malnutrition, but known facts suggest that more than half of the world's population subsists on diets inadequate for health. This is not a new phenomenon. There has probably never been enough food in the world to feed everyone well at any time in the world's history. Thus, if the challenge of feeding the world is to be met, food supplies must not only keep pace with population growth, but must be increased sufficiently to insure that the nutritional levels of millions of needy people are improved.

Present World Situation

At the present time the statistics on food production and population for the world as a whole are not entirely discouraging. Figures indicate that in recent years the world's population has been increasing at a rate of about 1½ per cent annually, while food production, after recovering from wartime dislocations, has risen at an average annual rate of about 2 per cent in the past five years.

But the essence of the world food problem is not what is happening in the world as a whole or on the average, it is the fact that there are great differences between one region and another. Although world agricultural production has increased steadily in recent years, it has increased unevenly. The greatest increase has occurred in the technically advanced countries.

At the same time, advances in applied medicine, in public hygiene, and in health education have led to a decrease in the death rate in many countries, but more particularly in the less developed and less well-fed countries. As a result, net population increases have been greater in the less technically developed countries than in the so-called advanced countries. The gap between the well-fed and the ill-fed has widened, not lessened.

At one end of the scale people in the United States and a few other countries of the temperate zone are not only living well, with a food supply providing more than 3,000 calories per person per day, but these countries are producing more food than can be sold in home and foreign markets. At the other extreme, in countries like India the farm land is overcrowded, technics have scarcely changed in 2,500 years and the production of food and of goods that can be traded for food is scarcely sufficient to provide the population with an average intake of 2,000 calories per day, with many people, of course, getting less.

Low production and productivity in the less developed countries are key elements in the world food problem. Average income per capita in most of these

countries ranges from about $50 to about $150 per year. The majority of the people live largely on diets of cereals and root crops, as they cannot afford to purchase other foods.

The solution of the problem looks simple: Distribute the agricultural surpluses from the United States and the other exporting countries among the countries where there is greatest need, and at the same time assist the less developed countries to improve their agricultural practices. However, let us look again at the situation, taking the United States and India as examples.

United States

The people of the United States began with a great unsettled area containing some of the best agricultural land on earth, and vast sources of raw materials. These facts and the circumstances of the industrial revolution made it possible for them to develop a remarkably efficient industrial and scientific system, so that the capacity of the United States to produce food has kept well ahead of the population and it now has a superabundant production.

India

A very different situation prevails in India. The population of India in the first six decades of the present century has not increased at a particularly rapid rate, percentage-wise. The rate has averaged 1.2 per cent per year, although a higher rate has prevailed in recent years. But India's farm land was already heavily settled in 1900. The percentage of the population engaged in agriculture has remained relatively constant at around 70 per cent, but the actual number of people living on farms has increased. This has resulted in continued fragmentation of holdings and increasing numbers of landless agricultural workers. Soils are exhausted. With the pressure of the population on the land, farmers cannot afford to leave wooded areas standing; without wood, they burn dung for fuel; without dung, the fields go largely unfertilized. Yields are among the lowest in the world. Illiteracy and religious beliefs hamper the spread of even such improved farm practices and food habits as may be practicable under these conditions.

On the population side, farmers want large numbers of children because they are thereby assured of the necessary labor to meet peak season loads. Also, children are counted on for support in old age. The birth rate is high, but the death rate is declining. With the continued extension of sanitation and health services, the death rate is likely to decline more rapidly in the future, resulting in a rapid increase in the population. The annual net increase in India's population is about 2 per cent at present.

There are two problems to be solved: The first, to increase per capita food production; the second, to teach the people to make the best use of their food supplies. The Indian government is keenly aware of these problems and is doing a great deal to improve agricultural practices. It is building large and small public irrigation works, encouraging farmers to install tube wells and Diesel pumps to irrigate their fields, sponsoring agricultural research, helping finance pest and disease control services, and developing a national agricultural extension service. It is also paying attention to better transportation facilities, better marketing institutions for farm products, and farm credit programs.

However, there is so much to be done and the resources the government can command are so limited by the poverty of the country that progress is necessarily slow. Demand for food in India still outstrips production, so that heavy imports of wheat and other grains are necessary to even maintain supplies at their current levels. Larger amounts of foods cannot be imported commercially from countries like the United States

where there is an abundance, because the government does not have the dollars. Special food distribution programs are emergency measures, and are not the long-term solution. The problem of maldistribution of food in the world will not be solved permanently until the poverty of countries such as India is cured.

One of the hopeful things for the future of the thickly settled Asian lands is the experience in Japan. Sixty years ago, Japan was largely an "underdeveloped" country. Today, through the rise of industry and the application of scientific research and methods to agriculture, yields per acre of most Japanese crops are among the highest in the world and Japanese farmers, though still handicapped by the small size of their holdings, are the most prosperous in Asia. Japan has also developed a widespread program of education in nutrition, and has introduced supplementary feeding programs for school children, industrial workers, and other groups.

International Assistance

An increasing development in world affairs since World War II has been the growth of international assistance programs. While there was some international aid, sponsored largely by church groups and private foundations, before the war, there are now permanent programs and institutions for the purpose, sponsored by government as well as nongovernment organizations. In the long run, the major part of the effort required to ease the problem of how to feed more people better must be performed by each of the countries concerned, but the international agencies such as the Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the United Nation's Childrens Fund (UNICEF), and bilateral agencies such as the United States International Cooperation Administration (ICA) provide channels through which countries can share their technical knowledge and help each other to solve their problems more rapidly than would be the case otherwise.

FAO was the first of the United Nations agencies to be established after the war. It came into being in 1945. WHO was established in 1948. The programs of FAO and WHO follow the same general pattern: each is concerned first with helping member governments determine what their problems are (FAO in the field of food and agriculture, WHO in the field of health), and then with promoting an exchange of information as to the best measures for dealing with them. This end is achieved by providing consultant help to member governments, by calling together expert committees and study groups, by awarding fellowships for study abroad, by training courses and seminars, and by publishing monographs, bulletins, and special reports.

Many of the activities of the two organizations which relate to nutrition are carried on jointly. Recently UNICEF has also given much needed material support. UNICEF assistance in combating world-wide undernutrition dates back to the post-World War II period in 1947 when the United Nations International Children's Emergency Fund was organized to meet the critical needs of thousands of sick and hungry children in the war-torn countries. Starting with an initial budget of about $1,000,000 and an emergency program of assistance to child care and feeding in Europe, it has gradually assumed a permanent and comprehensive function in response to the needs which have developed. At the present time, it allocates each year about $24,000,000 annually to assist more than 325 programs in about 100 countries and territories. These include material assistance to country programs for maternal and child health services; to disease control programs; to child feeding

through maternal and child welfare centers and schools; to milk plants and milk conservation and to the development of other protein-rich foods; and more recently, assistance to comprehensive country programs in the field of practical nutrition activities. In recent years about one-quarter of the UNICEF budget is allocated to the general field of food and nutrition activities.

Collection of Background Data

Lack of accurate up-to-date statistical information on agricultural production and on food consumption is in many countries a major obstacle to the development of a national policy on nutrition. Since sound measures for the improvement of nutrition can only be developed on the basis of information on the economic and social environment of the family, on the possibilities of improving food production and dietary practices, and on the nutritional needs of vulnerable groups within the population FAO and WHO have always promoted and given technical assistance to the collection of this information, and UNICEF has recently given material support to nutrition surveys.

One of the first tasks undertaken by FAO was a survey of world food supplies. This study was published as "The World Food Survey" in 1946. Since then FAO has continued to assist member governments to compile national food balance sheets annually. These are based on statistics for agricultural production and imports and exports of foodstuffs. FAO has assisted a number of countries to carry out food consumption surveys by providing training in survey methodology for local personnel.

Expert Committees and Study Groups

In October, 1949, only one year after the establishment of the World Health Organization, the first Joint FAO/WHO Expert Committee on Nutrition was convened to advise the two organizations on the development of their nutrition programs and to insure close coordination of their activities in this field. These meetings have continued at intervals of approximately two years and their reports[1-5] have become authoritative summaries of world nutrition problems, as well as guides to practical efforts directed at their solution. The reports have consistently called attention to such problems as protein malnutrition, pellagra, beri-beri, goiter, marasmus, vitamin A and riboflavin deficiency and nutritional anemias, as well as to the role in the solution of these problems of nutrition education, maternal and child health programs, agricultural extension and home economics activities, clinical and dietary surveys, nutritional anthropometry and other field activities.

FAO expert committees have made recommendations on calorie requirements[6] and protein requirements,[7] while WHO has convened a special study group to consider the problems of endemic goiter, ischemic heart disease,[8] and nutritional anemias.

The two organizations have also cooperated in a number of special studies such as the kwashiorkor surveys of Brock and Autret in Africa,[9] Autret and Behar in Central America,[10] and Waterlow and Vergara[11] in Brazil.

FAO/WHO/UNICEF Protein-Rich Foods Program

Recognition that a shortage of protein, particularly in the diet of preschool-age children in many areas of the world, was responsible for the disease kwashiorkor led to its consideration by the international agencies. The joint FAO/WHO Expert Committee on Nutrition discussed the problem at its meetings in 1949 and 1953. The surveys on protein malnutrition in Africa, Central America, and Brazil have been mentioned above. FAO

and WHO also sponsored two international conferences on protein malnutrition at Jamaica in 1953[12] and Princeton, N. J., in 1955,[13] with the cooperation of the Josiah Macy Jr. Foundation, New York. These conferences considered the extent of the problem and effective measures for its alleviation.

Action was stimulated by a generous grant from the Rockefeller Foundation in 1956. This fund is administered by the National Research Council Committee on Protein Malnutrition in collaboration with FAO, WHO, and UNICEF and is used to support an international program of research on protein foods. The UNICEF Executive Board approved an additional special allocation to enable the production and testing of initial lots of the food products to be studied in the research program referred to above. Valuable guidance to the research program since its inception has been contributed by the Protein Advisory Group established by WHO with representation from FAO and UNICEF.

Seven criteria were established to guide the selection of such foods: they must be available or capable of being produced locally; they must be within the economic means of the population to produce or buy; they must be readily transportable and have long storage life without refrigeration or other costly protection from tropical climates; they must be free of any toxic or deleterious effects; they must be acceptable to the population in taste, odor, and physical properties; they must have substantial nutritive values as protein supplements; and they must be products not already being used maximally as human food.

Up to the present time six products that appear promising have been produced and subjected to study. They are: fish flour, soy products, peanut flour, cottonseed flour, sesame flour, and coconut products. Others, such as sunflower seed and various legumes, may be added to this list later.

The initial objective in each case has been to locate a source for each type of product, to produce a test batch under carefully defined conditions and to study the product for its composition, biological value, safety in animals, and finally its biological value in man. The second objective has been to assist countries to establish or modify existing facilities, so that the food may be produced locally for human consumption and in a form suitable for feeding young children.

During the past two years, three of these—soya milk, fish flour, and peanut flour — have undergone sufficient research study and production-development testing to be nearly ready for extensive practical application. Participating in this coordinated work, either through the research or production funds mentioned above or through independent support, have been some 30 research groups located in 16 different countries and territories.

UNICEF's Increased Aid to Nutrition Program

The extension of UNICEF's emergency feeding program to a long-range program of assistance to supplementary feeding in health centers and schools has been made possible by large quantities of skim milk powder generously made available by the United States, and more recently by Canada and other countries. However, supplementary feeding, although valuable, is in itself insufficient to have a long-term effect, unless it has associated with it a comprehensive program of education in nutrition. UNICEF has, therefore, since 1957 developed in cooperation with FAO and WHO a program which includes: material assistance to nutrition education programs carried on by health services, schools and extension workers in agriculture, home economics and community development; assistance to practical measures such as school or community gardens, egg pro-

duction, poultry and small animal raising, fish ponds; and material assistance in the training of personnel required to carry out these functions.

Training in Nutrition

WHO has cooperated with FAO in sponsoring a series of regional conferences on nutrition in Latin America, Africa south of the Sahara, the Near East and South and East Asia. Other joint projects include a seminar on education in health and nutrition in Baguio for South and East Asia, a nutrition training course in Marseilles for French-speaking territories in Africa south of the Sahara, and one in Kampala for English-speaking territories in the same region.

FAO and UNICEF have jointly sponsored two seminars on school feeding in 1958, one in Bogota for personnel from Latin American countries, and one in Tokyo for South and East Asia.

Fellowships are one of the most important means at the disposal of FAO and WHO to give help of permanent value to countries in the development of their nutrition and general health programs. Such fellowships have been given to persons from a number of countries, including Algeria, the Belgian Congo, Brazil, Chile, Colombia, Costa Rica, Ecuador, Egypt, Finland, France, Honduras, Iraq, Lebanon, Paraguay, the Philippines, Thailand, and Viet Nam.

Role of Short- and Long-Term Consultants

WHO, to an even greater extent than FAO, carries out its programs mainly through the use of short- or long-term consultants assigned to assist countries or regions with both research and action programs in the field of nutrition. Short-term consultant visits are exemplified by the recent survey of vitamin A deficiency in Indonesia by a WHO team of three persons, and by short-term studies of pellagra in Yugoslavia, Egypt, and Basutoland. WHO consultants have initiated goiter surveys in Burma and Thailand. They have also assisted in the development of salt-iodization for the control of endemic goiter in Yugoslavia and visited 18 countries in Latin America for the same purpose.

A joint FAO/WHO team recently made a report on nutrition in Ceylon, while in Nigeria a joint FAO/WHO mission studied the need and possibilities for developing protein-rich foods.

The WHO Program in Central America and Panama

The program in Central America and Panama deserves special mention because the Pan American Health Organization administers an international institute for the countries of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. The regional activities of PAHO and WHO in the field of nutrition have their headquarters in this institution. While the Institute of Nutrition of Central America and Panama (INCAP) was established to study the nutrition problems of its member countries and determine ways in which they may be ameliorated or solved and assist governmental and nongovernmental agencies within the countries in the application of recommended measures, it is also serving as a demonstration and training center not only for persons from Latin America but also from other regions with similar problems. It publishes a variety of information, education, and training material which, while designed primarily for use in its member countries, is available throughout the region.

Increasing Food Production

The use of better types of seeds and livestock is one of the quickest ways to increase agricultural production. FAO

has paid great attention to this type of assistance to member countries. For example, the introduction of hybrid maize from the United States into Europe, which was begun by UNRRA in 1947, and later taken over by FAO, has been of very great importance to Western Europe. The introduction of new types of rice in the countries of the Far East is another large-scale campaign in crop improvement.

Even more spectacular are the results that have been achieved by applying modern knowledge and technics to livestock production. FAO's work in this field covers animal breeding, animal nutrition, livestock and range management, and the control of animal diseases and parasites. Much is also being done to improve fish production by mechanization of fishing craft, and by the introduction of new types of nets.

Food Technology

In many countries there is growing interest in the application of modern developments in food technology. This will enable better use to be made of food supplies and will reduce food wastage. At the present time, FAO has food technologists who are working in Burma, Pakistan, India, Turkey, Indonesia, and Thailand.

FAO and WHO are working jointly in the field of food additives. A series of meetings of FAO/WHO Committees on Food Additives were held in 1955, 1956, 1957, and 1958.[14-17]

Resources of FAO and WHO

The total resources of FAO and WHO are very limited, considering the magnitude of their tasks. Only a small portion of their funds are spent on nutrition projects, the largest part of the FAO budget being spent on agriculture, and that of WHO on the development of health services. FAO's regular budget for the two-year period, 1958-1959, is $17 million. In addition, it received in 1958, $8,085,000 from the United Nations Expanded Technical Assistance Program (ETAP). WHO's regular budget in 1958 was $14,158,000, and in 1959, $15,083,000. It received $5,046,643 from ETAP in 1958. In 1958 FAO spent $986,780 from its regular budget and $396,430 from ETAP funds on nutrition projects. WHO's expenditure was $41,370 and $106,116 for the same period.

United States Assistance to Foreign Countries

The United States has contributed more than any other country to relief, rehabilitation, reconstruction, and economic development in foreign lands. United States government grants and credits for these purposes since World War II total about $42 billion. This sum includes the contribution made by the United States to international agencies such as FAO, WHO, and UNICEF, but by far the largest part of it has been spent under bilateral agreements between the United States government and recipient countries.

The aid given has included technical assistance in improving agricultural production and in developing agricultural extension and health services. It has also included the sending abroad of large quantities of food. Part of this food has been donated, and part has been made available on special terms such as reduced prices, long-term credits, or accepting payment in the currency of the receiving country.

The use of United States surplus agricultural commodities for foreign economic aid was made possible by the enactment of the Agricultural Trade Development and Assistance Act of 1954 (commonly known as Public Law 480). This law authorized the donation of surplus foods to UNICEF and to private re-

lief agencies for distribution abroad through the regular programs of these agencies; the use of these surplus commodities to help meet various temporary emergency situations such as famine, occasioned by droughts and floods, and to support some special feeding programs; and the sale of these agricultural commodities for foreign currencies provided such sales will not interfere with normal world markets. The foreign currencies obtained from such sales can be used for a variety of purposes in the recipient country, including loans for economic development, market research, and the development of research programs in the fields of agricultural utilization, plant and animal husbandry, forestry, and nutrition.

In the first four years of the act—through June 30, 1958—exports of surplus foods donated to international organizations, such as UNICEF and nongovernmental agencies such as CARE and Church World Service, totaled nearly $650 million. The chief items were dried skim milk, cheese, wheat flour, and corn meal. About $350 million worth of commodities was exported to help meet famine or other emergency situations.

In addition, surplus agricultural commodities which were worth $2.54 billion at market value were sold for foreign currencies. Agreements were signed with 37 countries. The largest programs were those with India, Spain, Yugoslavia, Pakistan, Brazil, Italy, Turkey, Japan, and Korea.

The equivalent in foreign currencies of about $1.5 billion of the proceeds of these sales has been earmarked for loans to promote economic development and multilateral trade. The use of local currencies for financing research is a new development, and up to the present time no nutrition research projects have been carried out with Public Law 480 funds. However, the possibility exists and opens up new avenues for the future.

Outlook for the Future

Large as is the sum spent on technical programs by the United States and other countries, either individually or through international agencies such as FAO, WHO, and UNICEF, it goes only a small way toward solving the food problems of the less developed areas. It is likely that countries like India, Pakistan, and Ceylon will continue to be dependent on imports of food grains for some years to come. At present, the countries producing a surplus of food grains can make good the shortages. How far this can be done over a long period, only time will tell. Besides the need to increase agricultural production for direct consumption, there is need to increase purchasing power by the expansion of nonagricultural enterprises.

There are thus problems both at hand and ahead in the race between population and food production. Recently, proposals from B. R. Sen, director-general of FAO, and from President Eisenhower have focused attention on the continuing problem of hunger. The President has suggested a "Food for Peace" program, and Mr. Sen has asked that a particular year be designated as the period for a world-wide concerted and concentrated effort to free the world from hunger.

Man has not yet put his best efforts to work in the fight against hunger. However, this is an age of science and technology, surely means can be devised to feed mankind far into the future.

Summary

Statistics on world food production and population indicate that production is increasing at an annual average rate of about 2 per cent, while the rate of population increase is about 1½ per cent. However, the greatest increase in agricultural production has taken place in the technically advanced countries.

More than half of the world's population still subsists on diets inadequate for health.

Countries where food supplies are inadequate must not only increase food production, but must increase the purchasing power of the population by the expansion of nonagricultural enterprises.

Although large sums are being spent on technical programs by the countries individually, or through international agencies such as FAO, WHO, and UNICEF, the food problems of the underdeveloped areas have not yet been solved.

Man has not yet made a world-wide concerted effort to fight hunger, using modern scientific and technological findings.

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This article is a summary of the papers presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

Psychiatric care in prepayment medical plans is a topic of considerable current interest. Here is a report on the experience of one plan where psychiatrists have been involved for over a decade in prepaid group practice.

THE ROLE OF THE PSYCHIATRIST IN A PREPAID GROUP MEDICAL PROGRAM

Louis L. Tureen, M.D.

THE ST. LOUIS Labor Health Institute (LHI) provides medical care through a voluntary prepaid medical plan serving more than 15,000 eligible members. Within a year after its organization in 1945, a psychiatrist was employed on an experimental basis, initially for a two-hour period each week. There was no established precedent for his function, necessitating a trial and error adaptation to the demands put on him, adjustment to the resistance of patients and staff members alike, and accommodation to the economic realities of the institute and the limitations imposed upon the medical program by financial factors. Since the aim of the LHI is to provide an integrated program of medical care on a group practice basis, it was necessary for him to become a member of the medical team.

Approximately 50 physicians and dentists are employed part time on salary. Most patients are seen at the medical center. Hospital care is also provided, in addition to visits at the patient's home. The LHI operates its own hospitalization plan with benefits somewhat more liberal than those offered by Blue Cross. For example, psychiatric patients receive one month's hospitalization in contrast to the Blue Cross' two weeks. All medical and surgical specialties are covered, either by regular staff members, or by outside consultants who are paid on a fee-for-service basis. Medical facilities are divided into sections, each directed by a chief of section.

Currently, three psychiatrists provide 20 hours a week to the neuropsychiatric section. They examine and treat all patients, generally referred by other physicians, although some are self-referred, who have neurologic or psychiatric problems. Patients are also treated in the hospital; most of these have neurologic disorders. Approximately 20 per cent of all patients referred to the neuropsychiatric section are neurological cases.

There are 6,244 union members, who, with their families, comprise the 15,036 persons entitled to LHI care in 1958. Approximately 9,000 of these avail themselves of services in any given year. During 1957, 1,805 new patients were seen in the center. Total visits numbered 102,823. In the same year 486 patients consulted the neuropsychiatric section, 120 patients for the first time. There were a total of 1,297 visits. Since all are members of Local 688 of the Teamsters Union, they represent a relatively homogeneous socioeconomic group, primarily semiskilled workers in ware-

housing or light manufacturing plants, with an average weekly wage of $60-$90. Because of financial limitations, such people generally cannot afford private psychiatric care. We were interested in the incidence of emotional disorders in this group of working people; although our figure of 6.6 per cent seems to be low because the demand for psychiatric care is slightly more than half met, it represents a base line. A 10 per cent incidence would probably be a more accurate level.

Program of Psychiatric Service

The psychiatrist acts as consultant to the medical staff and as therapist to individual patients requiring treatment. As consultant, the psychiatrist returns half of the patients referred for diagnostic appraisal back to the referring physician for continued care. Evaluation of the patient's personality and symptoms becomes an important factor in the future course of the medical care of certain patients. For example, prior to hospitalization, the case history of each patient is reviewed by the entire medical staff at weekly meetings. The judgment of the psychiatrist becomes an important factor in the decision to perform some operations, or whether the patient is even hospitalized.

The treatment program is geared to the medical needs of the patient, but is kept within the economic framework of the LHI. Actually, psychiatric practice at the LHI is probably very similar in character to the private practice of many psychiatrists, but it is much different from the private practice of a psychiatrist who primarily engages in intensive long- or short-term psychotherapy. Because of the close association with other specialties, many patients are referred to the psychiatrist who usually would be carried by the internist or the general practitioner. Because of the severe time limitations for appointments, for maximum efficiency, the length of appointments must be carefully budgeted and scheduled according to the type of case. Since only 25 or 30 minutes are available on the average, time is used most effectively when a chronic supportive case, or a nonmoving case, preoccupied with somatic symptoms, is given an appointment of only 10 to 20 minutes, while a person with a good many personality assets is allotted 40 or 45 minutes.

Most psychiatric patients do not absent themselves from work while attending the medical center. Very few are hospitalized, except for diagnostic study, or in severely disturbed states. Where feasible, electroshock therapy has been given on an outpatient basis at the hospital. Treatment has been classified as (1) supportive, (2) suppressive, (3) dynamic psychotherapy.

Supportive Therapy—Frequently it is possible in one, or two, or at most very few interviews to explore with the patient on a quite superficial level the meaning of his presenting disturbances. It seems wise in these cases to go no further, and by reassurance and simple interpretation, to relieve distress and anxieties. In this way the psychiatrist serves as an adjunct to the medical or surgical department, helping to clear up threatening and disturbing symptoms. For example, following an operation for removal of a herniated disc, the persisting pain confined the patient to bed for several weeks, and subsequently she required re-hospitalization. The psychiatrist recognized this patient's persistent illness as a reaction to her quarrel with a daughter over the former's paramour. The illness served as a bid to enlist the daughter's interest and friendship. She was isolated in her home. Two weeks in a convalescent hospital, where she received psychotherapy, engaged in occupational therapy, and was surrounded by friendly hospital staff and fellow patients, provided emotional support. In addi-

tion, during three psychiatric interviews, she was able to "ventilate" and gain an appreciation of the emotional aspect of her symptoms, which promptly cleared up and she was able to resume work. No further therapy appeared necessary at this point.

Suppressive Therapy — In instances where interpersonal relationships at home or at work are more seriously disturbed, amelioration of symptoms, rather than resolution of conflicts may become the aim of treatment. Use of sedatives, inhalations of carbon dioxide, and even electroconvulsive therapy seem indicated and are utilized. Some support is additionally provided in interviews. For example, a case of ulcerative colitis could not accept psychotherapy. Use of carbon dioxide was promptly followed by an arrest of symptoms, and x-ray findings, which had progressed for two years previously, showed marked resolution of the pathological process. There was a decrease of bowel movements to one a day, and a gain in weight. In other instances, depressed patients could be restored to work within two or three weeks. It is frequently necessary to make interpretations to members of the family, and more particularly, to the personnel director as to the significance of the patient's symptoms and behaviors. Such "environmental manipulations" help tremendously in the treatment program.

Dynamic Psychotherapy—More intensive psychotherapy is limited to a relatively small number of patients, consistent with the time available to the psychiatrist. It is practically impossible to give a patient more than one appointment a week no matter how great the need. Nevertheless, it is possible to treat successfully over a period of several years, such long-term complex cases as homosexuality, gifted personalities with psychotic potential, some severe personality disorders, some fairly severe neurotic disturbances. This is regarded as an effective approach to a group of patients who otherwise could rarely have the help of a psychiatrist. The relationships with these patients develop similarly to those in a private psychiatric setting.

Results of Treatment

Details of randomly selected case histories of 471 neuropsychiatric patients treated during a period of eight years are analyzed. Ninety-six were neurological problems, 369 were psychiatric cases, and six were found to be free of neuropsychiatric disorders; 36 children were included in the group. Of the psychiatric cases, 320 were nonpsychotic, 49 were psychotic. The latter group included seven manic-depressive reactions, 35 schizophrenic reactions, 14 of whom might have been included as a group of hypochondriasis with fixed systematized symptom reactions.

The nonpsychotic patients were classified in accordance with the American Psychiatric Association nomenclature with the following major groups:

1. Psychoneurotic reactions, 181 cases. These included anxiety, depressive, obsessive-compulsive, phobic and conversion reactions.
2. Psychophysiological reactions (psychosomatic), 89 cases.
3. Personality disorders, 50 cases (Table 1).

An attempt was made to correlate the number of visits to the psychiatric clinic with the change in symptom status of the patient. It is admittedly difficult to evaluate improvement in such patients, since frames of reference vary widely. Using the criterion of relative well-being, and the ability to function in the patient's appointed job, each psychiatrist recorded his own impressions. Our data show that 40 per cent of the patients made one or two visits. This group is recorded as showing a 20 per cent improvement rate, in contrast to the 75 per cent improvement rate in the group making three or more visits. There was an

Table 1—Incidence of Psychiatric and Neurological Cases, Showing Numbers of Improved and Unimproved

	Number	Improved	Unimproved
Nonpsychotic Cases			
Psychoneurotic Reactions			
Anxiety Reactions	86	46	40
Depression Reactions	38	24	14
Obsessive-compulsive reactions	5	1	4
Phobic reactions	19	11	8
Conversion reactions	33	10	23
Totals	181	92	89
Psychophysiological Reactions			
Musculoskeletal reactions	36	21	15
Cardiovascular reactions	18	8	10
Skin reactions	8	5	3
Gastrointestinal reactions	18	13	5
Others	9	5	4
Totals	89	52	37
Personality Disorders			
Totals	50	26	24
Total Nonpsychotic Cases	320	170	150
Total Psychotic Cases	49	16	33
Total Neurological Cases	96		
Consultations—No neuropsychiatric disease	6		
Grand Total—Cases	471		

over-all improvement rate of 53 per cent. The great majority of patients made no more than ten visits to the psychiatrist. The group with psychosomatic disorders had the best rate of improvement, even within the "fewest visits" bracket. The inference drawn here is that this group of disorders lends itself best to brief superficial therapy in a medical context such as exists at the LHI. It is also apparent that from three to ten visits for patients referred to the psychiatric clinic is the most fruitful and economically feasible program for the center.

There is a great opportunity in this type of practice for close association with men in other medical specialties, with a close interchange of ideas and collaboration in treating patients. Both the psychiatrists and the other specialists can benefit from this interchange of ideas and approaches in medical therapy. One direct result of this close collaboration is reflected in the frequency with which other physicians turn to the psychiatrist for advice and help. This contrasts with the negative attitude manifested by some physicians in the very early days of the group which so often reflected itself in the resistance of patients who were referred for consultation.

Administrative Problems

Although there are serious inadequacies in the program, it must be remembered that LHI is perhaps unique in the kind of comprehensive psychiatric care provided for its members. The extent of such care is naturally limited by the budget. Immediate demands for

services of other specialties must be weighed against requirements for augmenting the psychiatric services. A social worker would be a great asset to the team. In the early years of the program one was indeed employed, but proved unsatisfactory personally because of her inadaptability to the peculiar needs of a prepaid group program. Increased staff hours are needed, and will be provided as soon as the budget permits. The lack of both a social worker, and of more staff hours is particularly compromising for the field of child psychiatry, making it almost impossible to treat children adequately in such a setting. The need for a worker to see the child, another worker to see at least one parent, makes even greater demands upon the very limited facilities of the group. Part of this difficulty is overcome by employing a psychologist periodically on a fee basis to meet this need, and for clinical testing. It would be preferable to add the psychologist to the regular staff for continuing service. By and large, it has become necessary to refer children requiring much treatment to a community child guidance clinic. Utilization of other community resources, such as a speech training center, occupational therapy workshops, and consultations with personnel directors of the various employing firms, have been exceedingly helpful. Plans for group therapy have been considered, but so far have not been executed.

Industrial Psychiatry Aspects

Certain problems are common to industrial medicine in any setting, such as sick leave, compensation claims, reemployment and the like. These frequently arise in this setting and the LHI physicians inevitably and unwittingly become involved with them. The physician's distaste for this facet of medical practice is exemplified by the reluctance to treat any compensation cases that may present themselves, though service is not refused to patients who ask for it. The LHI physician is even more loathe to become entangled in a dispute between patient and employer, whether it concerns certification for sick leave to which each patient is entitled upon his visit to the medical center, the employer's concern about excessive absenteeism, or the patient's striving to secure his job again after a disabling illness. Despite his own feelings, the thoughtful and conscientious physician is soon faced with a need to understand the meaning of these situations in his therapeutic relations with the patient. In this manner, the neuropsychiatric section has approached the problem of industrial psychiatry from the employee's point of view. At this time wo do not wish to enlarge upon this subject other than to comment that it is rare for patients to bring direct complaints about work to the psychiatrist. Rather, some of the presenting symptoms and medical demands made by the patient, e.g., demands for prolonged sick leave, and so forth, are subtle manifestations of their resentments, and could be explored if this is desired.

Mental Hygiene Program

It would seem that the preventive medicine approach of the LHI would provide support from the administration, medical personnel, and membership of the group for a program of mental hygiene. At various times, attempts have been made to institute a program of education for patients, dealing not only with mental health, but also with other aspects of health. Posters in the waiting room advertise health habits and procedures, e.g., weight reduction, adequate diet, polio vaccination, periodic physical examinations. A series of lectures to groups of about 20 patients was instituted, covering such subjects as infant care, obesity, and heart disease. The psychiatrist participated in these talks

presenting the emotional aspects of these problems, and a health educator was appointed to direct the entire program. Movies illustrating some of the subjects were shown to patients assembled in the waiting rooom. On the whole the program was sound, but unfortunately was discontinued after one year, primarily because of lack of personnel and funds to support it. It is our belief that this program should be reactivated, since the patients manifested much interest in it.

Opportunities for Research

Reference has already been made to the industrial psychiatry aspect of the program. Attempts have been made to explore with personnel directors some of the mutual problems facing employers and psychiatrists. A series of meetings were held to this end in which discussions were freely developed between representatives of the employers, the LHI, a psychiatrist, and a psychologist. Questions of absenteeism, sick leave, reassignment of recovered patients, and employment of epileptics were discussed. Naturally, in such a mixed group, heated arguments arose which were not easily resolved because of conflicting interests. That such meetings could have taken place at all is an encouraging sign, and it requires follow-up and analysis.

Data can be assembled over a number of years which would give a true index to the incidence of psychiatric disorders in a close knit socioeconomic group. Group therapy can be a real source of research data should such a program ever be instituted. Study in race relations is possible, inasmuch as at the LHI there is no color bar within the professional, administrative, or patient groups. Here is a real opportunity for exploration of the needs, feelings, and attitudes of Negro patients not usually present in other settings in the St. Louis area.

Summary and Conclusions

1. A psychiatric program within a prepaid voluntary medical program has been operating successfully since 1946, and has expanded its facilities. Further extension of this program, based on past experiences, is urgently needed.

2. Within this setting the psychiatrist has functioned as a member of a medical team, closely cooperating with other physicians, and with dentists in the care of the patient. This has afforded an opportunity for mutual education among the various doctors, and the development of insight into the emotional aspect of sickness.

3. An incidence of 6.6 per cent of emotional illness within the total patient load was established for the year of 1957. This undoubtedly underestimates the true incidence of psychiatric illness in this group of patients.

4. Psychiatric services have been made available to a socioeconomic group which ordinarily could not avail itself of such services in private practice.

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Enterococci as indicators of pollution in water are receiving increased attention. Determination of their presence, however, requires a suitable medium and this has been lacking. This study was undertaken to see how productive various media were for enterococci.

A COMPARATIVE STUDY OF MEDIA FOR DETECTION OF ENTEROCOCCI IN WATER

Charles C. Croft, Sc.D., F.A.P.H.A.

THE FECAL STREPTOCOCCI, or enterococci, have received increasing attention as indicators of pollution. Determination of enterococci may supplement information provided by the coliform group of organisms in water. The previous lack of a generally accepted and a suitable medium has, in part, been responsible for the infrequency of their use as supplementary indicators of pollution. The statements of Suckling[1] that enterococci are present in feces and sewage and are found in polluted water; that they are not found in pure water and sites away from human and animal life; and that enterococci do not multiply outside the animal body in water or soil have been amply confirmed.[2-4]

Recent editions of "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes" have not included methods for enterococci, but reference has been made to British work. The latest issue of British methods[5] includes a section on fecal streptococci using tellurite or azide media for their detection. It was with the intent of rectifying this omission that the present study was encouraged by the Standard Methods Committee.

Media for enterococci were selected for this collaborative project which were either new and untested, or which had been found highly productive in previous comparisons. The practicality of the method for widespread use was likewise considered. This study was designed to compare the productivity of various media for enterococci. Tube dilution and membrane filter technics were performed in eight laboratories* with untreated natural waters from widely separated parts of the country and collected during cold and warm seasons. In addition the relationship, if any, between the coliform bacteria and enterococci in these waters could be studied.

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Methods

Selection of Media

Liquid media for enterococci rely largely upon sodium azide to inhibit coliform and other Gram-negative bacteria. Mallmann and Seligmann[6] showed that the azide dextrose broth of Rothe (AD) was superior to other media employed at that time as a presumptive test for streptococci. Later, to eliminate Gram-positive rods a confirmatory medium, ethyl violet azide broth (EVA), was developed by Litsky, Mallmann, and Fifield.[7] This AD-EVA tube dilution method has since been employed frequently in various studies and it was, therefore, chosen for this work.

A second tube method was desirable for comparison. Buffered azide glycerol glucose broth (BAGG) was described by Hajna[8] as an improvement over his "SF" broth and was recommended as a combined presumptive and confirmatory medium. This medium could be incubated at 37° C when used with water samples. Since it had not received extensive trials, it was added to the present study.

The improved highly selective medium for enterococci of Slanetz and Bartley,[9] M-enterococcus agar, for use with membrane filters (MF) was taken as the third method for detecting enterococci. The authors claim this simple and direct medium to be 100 per cent selective for fecal streptococci as over 2,500 isolates were identified as fecal streptococci.

After the study was in progress, a second MF medium for enterococci in dehydrated form, the Kereluk EVA agar,[10] was made available. Unfortunately, it had limited use in only three of the participating laboratories.

A simple method of checking the reliability of the media for detection of enterococci was sought. Obviously, the criteria of Sherman[11] for the enterococcus group were not simple, namely, growth at 10° and 45° C, in 6.5 per cent sodium chloride broth, at pH 9.6, in the presence of 0.1 per cent methylene blue, and demonstration of Gram positively stained streptococci. Likewise, serologic checking for Group D polysaccharide by the Lancefield technic could not be applied. The EVA confirmatory broth was said by Litsky, et al.,[12] to confirm accurately 98 of 100 positive broth tubes, as growth was checked according to the method of Sherman. Accordingly, it was used as the confirmatory method with BAGG broth and with the MF agars.

The lauryl sulfate broth presumptive test with positive tubes confirmed in brilliant green bile broth, 2 per cent, was used with all waters to provide the coliform densities by the most probable number method (confirmed test) for comparison. Likewise, the coliform membrance filter technic was used as an optional coliform method, using the newly described MF-Endo (M-coliform broth) of Fifield and Schaufus.[13]

Conduct of the Study

Dehydrated culture media of identical lot numbers for each were kindly furnished the participating laboratories. Difco Laboratories, Inc., generously supplied four of the media, and the Baltimore Biological Laboratory, Inc., the other four media. The Millipore Filter Corporation kindly donated 100 white grid filter membranes packed for autoclaving to each laboratory.

Water samples were collected in sterile quart Mason jars having two-piece enamel lined dome lids. They were examined the same day, if possible, or within 24 hours of collection. If held, they were kept under refrigeration. It was suggested that attempts be made to include one-third of the samples with a coliform MPN of 250 per 100 ml or less, and one-third of the samples with greater than 10,000. Repeat samples from the same source were allowed. The study extended from February to August, 1958. Information concerning known

sources of pollution, rainfall, and turbidity was obtained.

Culture media were used within seven days after preparation. The pH of representative lots of media was recorded.

The tube dilution tests were set up in five tubes each of three or more dilutions in order to reach a final limiting dilution. Coliform MPN determinations were made according to Standard Methods procedures.

AD broth was incubated at 35° C for 48 hours. Transfers of three loopfuls of broth from turbid tubes were made to EVA broth tubes. These were incubated for 48 hours and read for turbidity, which at most times was evidenced by a purple button at the bottom of the tube.

At 24 and 48 hours BAGG broth was read for turbidity accompanied by acid production as evidenced by a color change in the indicator. The medium was prepared adding the specified amount of reagent ACS glycerin.

Water was filtered through the membranes according to recommended procedures, attempting to attain 40-100 colonies on the membrane. Both coliform and enterococcus MF media were sterilized by boiling, according to directions. Ten ml of agar was used in 60 mm Petri plates and membranes were layered on the surface, eliminating air bubbles. Plates were inverted and incubated 48 hours in a standard 35° C incubator. The enterococcus colonies were picked to EVA broth on the basis of ten colonies per membrane if the total exceeded 20, five if between five and 20, and all colonies if less than five. According to the manufacturer's instructions ethyl alcohol was not added to the ingredients for M-coliform broth, although this was originally suggested by Fifield and Schaufus.

It was suggested that only membranes with 40-100 colonies be counted. If none of the counts fell within this range, the closest was used. All red and pink colonies were counted.

Results

One hundred and eighty-five water samples were examined by the eight laboratories (Table 1). Flowing water included rivers, streams, creeks, and canals. Impounded water included lakes, reservoirs, ponds, and lagoons. Most probable number estimates per 100 ml and membrane filter counts per 100 ml are not listed in this report for the five tests on each water sample. Enterococcus counts or densities per 100 ml ranged

Table 1—Source of Water Samples Included in Study

Laboratory	Flowing Water	Impounded Water	Wells	Sewage	Total
1	12	5	4	0	21
2	10	9	10	0	29
3	23	0	0	5	28
4	9	0	0	0	9
5	11	14	0	0	25
6	14	2	8	0	24
7	17	5	1	2	25
8	16	8	0	0	24
Total	112	43	23	7	185

from less than two to 1,600,000 for one sewage sample. In the very few cases where final endpoints were not reached, the count was recorded as "greater than . . ." and was used in the tabulation. Also, in several instances insufficient water was filtered or inoculated to obtain accurate densities in low count waters. In these cases, with counts less than 100 or 200, the result was regarded as one; with counts of less than ten the result was recorded as half the total.

A simple method of statistical analysis of the data was utilized,* the computing of ratios of the density obtained by one method, A, to that of another, B. A ratio of unity indicates the equivalence of results. A ratio of less than one bespeaks of greater recovery for method B, whereas, a ratio of greater than one bespeaks of greater recovery for method A.

The AD-EVA enterococcus MPN's per 100 ml were utilized as the standards of comparison or common denominator for the BAGG and M-enterococcus results for enterococci, since this method has been used frequently, and visual inspection indicated relatively high enterococcus counts. Ratios against BAGG densities and M-enterococcus counts were prepared and arranged in order of magnitude. The ratios ranged from 0.001 to 17.1. Median ratios were determined for each laboratory, a measure of the central tendency, not influenced by outlying observations. The 95 per cent confidence interval of the median was also found for each laboratory, according to the method of Nair.[14] These figures are presented in Table 2, together with a tabulation of the number of times BAGG-EVA or M-enterococcus agar gave a higher yield of enterococci (shown by ratios greater than one), equal yield (ratios equal to one) or lower yield (ratios less than one). These results showed a lower yield of enterococcus densities from BAGG-EVA in 70.8 per cent or 131 of the 185 water samples than from the AD-EVA method. The difference between this figure and 14.6 per cent giving a higher yield is significant at the 99 per cent level by the Chi-square test. In contrast, using the M-enterococcus agar of Slanetz, only 51.2 per cent or 90 of the 176 water samples tested gave a lower yield than by AD-EVA. This difference (51.2 vs. 44.3 per cent) was not significant by the Chi-square test and indicates that this membrane filter method was of the same order of productivity as the AD-EVA.

The Kereluk EVA agar for use with the membrane filter was used for only 29 water samples along with the Slanetz M-enterococcus agar. A mean enterococcus count of 13,012 per 100 ml was obtained for the 29 samples with the Kereluk medium and 14,861 for the Slanetz medium. In our experience colonies from the EVA membranes were smaller than those from M-enterococcus agar membranes; nevertheless, the K-EVA medium deserves further study.

The optional use of the M-coliform broth of Fifield and Schaufus in seven laboratories furnished counts for 161 water samples, and as a by-product of the enterococcus data comparison between these counts and standard coliform MPN densities are presented in Table 3, in the same manner as for the enterococci. Using this particular lot of medium, 112 or 69.6 per cent of the MF counts were lower than MPN estimates, and the difference (69.6 vs. 29.2) was significant by the Chi-square test. This would indicate that this MF method was less productive of coliforms than the standard MPN tube dilution method. The high median and confidence interval for laboratory number eight cannot be explained by the reported distribution of

* The advice of Dr. Harold Thomas, Jr., Harvard University, and of Harold F. Clark, Robert A. Taft Sanitary Engineering Center, and the assistance with computations rendered by Phyllis Poelman, Statistical Analysis Unit, Ohio Department of Health, are gratefully acknowledged.

colonies on the membranes. The difference could be explained by a unique character of water in that locality, or by changes produced by the unusual technic of preparing high dilutions of the water samples and filtering 100 ml of these dilutions.

Discussion

It seems unlikely that a fixed relationship between enterococci and coliforms can exist. There are many complicating biological factors involved, beginning with the relative numbers in mammalian

Table 2—Relationship of Counts of Two Enterococcus Media to Those with Azide Dextrose-Ethyl Violet Azide Broths, together with Median Ratios and 95 Per cent Confidence Limit Ratios per 100 ml

BAGG-EVA Broths

Lab. No.	No. of Samples	Higher		Equal		Lower		BAGG-EVA AD-EVA Ratios/100 ml	
		No.	Per cent	No.	Per cent	No.	Per cent	Median	95 Per cent Confidence Zone
1	21	1	4.8	2	9.5	18	85.7	0.39	0.22–0.70
2	29	6	20.7	8	27.6	15	51.7	0.85	0.33–1.00
3	28	4	14.3	6	21.4	18	64.3	0.62	0.38–1.00
4	9	2	22.2	1	11.2	6	66.6	0.46	>0.01–1.55
5	25	1	4.0	3	12.0	21	84.0	0.35	0.25–0.50
6	24	6	25.0	3	12.5	15	62.5	0.485	0.26–1.00
7	25	2	8.0	4	16.0	19	76.0	0.44	0.29–0.70
8	24	5	20.8	0	0.0	19	79.2	0.265	0.11–0.42
Total	185	27	14.6	27	14.6	131	70.8		

Difference between higher and lower significant at the 99 per cent level.

M-Enterococcus Agar (Slanetz)

Lab. No.	No. of Samples	Higher		Equal		Lower		M-Enterococcus AD-EVA Ratios/100 ml	
		No.	Per cent	No.	Per cent	No.	Per cent	Median	95 Per cent Confidence Zone
1	21	11	52.4	1	4.7	9	42.9	1.12	0.80–1.50
2	29	8	27.6	4	13.8	17	58.6	0.75	0.50–1.00
3	28	11	39.3	1	3.6	16	57.1	0.795	0.55–1.53
5	25	8	32.0	0	0.0	17	68.0	0.61	0.43–1.29
6	24	11	45.8	2	8.4	11	45.8	1.0	0.71–1.36
7	25	18	72.0	0	0.0	7	28.0	1.30	1.11–1.90
8	24	11	45.8	0	0.0	13	54.2	0.855	0.45–3.42
Total	176	78	44.3	8	4.5	90	51.2		

Difference between higher and lower not significant.

Table 3—Relationship of M-Coliform Counts to Coliform MPN Densities, together with Median Ratios and 95 Per cent Confidence Limit Ratios per 100 ml

Lab. No.	No. of Samples	Higher		Equal		Lower		MF/MPN Ratios/100 ml	
		No.	Per cent	No.	Per cent	No.	Per cent	Median	95 Per cent Confidence Zone
1	12	2	16.7	0	0.0	10	83.3	0.69	0.21–0.98
2	29	8	27.6	0	0.0	21	72.4	0.57	0.19–0.93
3	23	4	17.4	1	4.3	18	78.3	0.41	0.24–0.71
5	25	1	4.0	0	0.0	24	96.0	0.32	0.20–0.42
6	24	5	20.8	0	0.0	19	79.2	0.60	0.24–0.96
7	24	9	36.0	0	0.0	16	64.0	0.77	0.49–1.11
8	23	18	78.3	1	4.3	4	17.4	2.86	1.29–4.62
Total	161	47	29.2	2	1.2	112	69.6		

Difference between higher and lower significant at the 99 per cent level.

intestinal tracts and ending with different survival rates under identical conditions. Notwithstanding these recognized differences, it seemed necessary to examine the data for the 185 water samples concerning the relationship of enterococci to coliforms.

Only the standard coliform and the AD-EVA enterococcus MPN estimates were used, since these methods were shown to give the higher densities. Ratios of enterococcus to coliform densities were prepared and arrayed in descending order for the flowing water, impounded water, wells, and sewage samples. Ratios ranged from 11.0 to 0.001 which would tend to indicate o nonconstant relationship between the two groups of organisms. However, the small spread of the confidence range about the median for flowing water (Table 4) reflects upon the accuracy of the median value of 0.215. The proportion of enterococcus densities which were either higher or lower than the coliform densities also indicate variability between the two groups of organisms. The well water samples showed the greater divergence, as 34.8 per cent had higher enterococcus densities and 65.2 per cent had higher coliform densities.

Assuming the median to be the best measure of central tendency in these examinations, enterococci were present 21 per cent as frequently as coliforms in flowing water, 23 per cent in impounded water, 42 per cent in wells, and 10 per cent in sewage. Therefore, the ratios of coliforms to enterococci for flowing water, impounded water, wells, and sewage samples from this study are approximately 5:1, 4:1, 2.5:1, or 10:1, respectively. If one prefers to use the arithmetic means, the ratios are 8:1, 2.5:1, 3:1, and 10:1, respectively. The confidence intervals of the median ratios overlap; therefore, a significant difference between these ratios was not established. Further investigation might establish a significant difference between the ratios of enterococci to coliforms for various types of water.

Previous investigators determined ratios of coliforms to enterococci as follows: Litsky, Rosenbaum, and France,[14] using AD-EVA—13.3:1 (sewage); Slanetz and Bartley,[9] using M-enterococcus agar—1:1.9 (water), 1.7:1 (sewage),

1.6:1 (human feces), and 1:15 (animal feces).

The simplified method of confirming enterococci in EVA broth, as used in this study, did not provide precise information concerning the accuracy of the media, particularly with enterococcus colonies selected from filter membranes. EVA is a selective medium and minute inocula from small colonies may not have overcome the inhibitory effects. This was demonstrated in our laboratory by first transferring some of the growth to trypticase soy agar from minute colonies which did not confirm in EVA. The resulting growth was then inoculated into EVA broth and in these instances growth was obtained. Large colony types of enterococci grew quite readily in EVA broth. It is probable that some strains of fecal streptococci do not multiply in this medium.[15] So-called atypical strains may be involved.[16] Based upon these observations, it seems likely that enterococci as determined in this study were reported in somewhat fewer numbers than were actually present. Some difficulty was experienced in judging minute, slightly pink colonies on filter membranes.

Records of transfers of growth which failed to give confirmation were compiled for all media. These were quite constant for the eight laboratories. Of 190 transfers from lauryl sulfate broth to brilliant green bile, 11 per cent failed to confirm as coliforms. Using AD broth, 20 per cent of the 1,636 transfers to EVA did not confirm; with BAGG there was a 14 per cent nonconfirming rate from 1,191 transfers; and from M-enterococcus membranes 13 per cent of 1,533 colonies failed to confirm. The enterococcus counts reported from M-enterococcus agar were not adjusted on the basis of the percentage of colonies which did not confirm in EVA broth.

Attempts were made to evaluate reasons for high or low enterococcus densities on the basis of notations submitted with the reports concerning known sources of pollution, heavy rainfall

Table 4—Comparisons of Standard Coliform and AD-EVA Enterococcus MPN/100 ml, All Laboratories

	Flowing Water	Impounded Water	Wells	Sewage
No. of samples	112	43	23	7
Median ratio: $\frac{\text{AD-EVA}}{\text{coliform}}$	0.215	0.23	0.42	0.10
95 per cent confidence zone, ratios	0.12–0.31	0.09–0.35	0.10–1.43	0.01–0.41
No. enterococcus MPN's higher	20	5	8	0
Per cent enterococcus MPN's higher	17.8	11.6	34.8	0
No. enterococcus MPN's lower	86	37	15	7
Per cent enterococcus MPN's lower	76.8	86.1	65.2	100.0
Mean enterococcus MPN/100 ml	11,032	520	1,810	495,143
Mean coliform MPN/100 ml	87,172	1,246	3,750	5,168,571
Ratio: $\frac{\text{Mean enterococci}}{\text{Mean coliforms}}$	0.13	0.42	0.48	0.095

within one week, or excess turbidity. Data for 16 water samples with enterococcus to coliform ratios above two and 24 with ratios below 0.04 were examined. It was difficult to correlate any effects of rainfall or nearby sources of pollution. There were only 15 water samples which showed coliform organisms (4.5-3,300 per 100 ml), but they contained fewer than four enterococci per 100 ml. Thirteen of these latter samples were collected when from 0.5 to 2.46 inches of rain had fallen during the preceding week, which might be considered evidence for the washing of so-called nonfecal types of coliform bacteria into the water sources. Conversely, there were only two samples from a well which showed below two coliforms, but with 11 and 14 enterococci per 100 ml. The well was within 100 feet of a cesspool.

Some of the same water sources showed divergent ratios of enterococci to coliforms even when collected within a few days of each other. It should be noted, however, that many of these samples had extremely low counts, which would tend to magnify differences in ratios. This may reflect upon the accuracy of the methods employed in sanitary bacteriology. Woodward[17] has pointed out that many MPN estimates are not precise, especially when improbable combinations are used in the calculations.

A sanitary survey of each water source might best provide the information concerning pollution.

In the great majority of specimens enterococci were present together with coliform bacteria but usually in fewer numbers. Enterococcus indexes should thus provide valuable supplementary data concerning pollution.

Summary

One hundred and eighty-five water samples were examined for enterococci in eight different laboratories by two tube dilution methods and by a membrane filter procedure. These were azide dextrose (AD) broth with ethyl violet azide (EVA) broth confirmatory, buffered azide glycerol glucose (BAGG) broth with EVA confirmatory, and M-enterococcus agar.

AD-EVA and M-enterococcus agars were found to give the same order of productivity. BAGG broth gave a lower yield of enterococci in 70.8 per cent of the water specimens tested.

M-coliform agar gave lower counts for coliform organisms than the standard tube dilution MPN method.

Based upon median ratios of enterococci to coliform bacteria, there were 21 per cent as many enterococci as coliforms in the samples of flowing water, 23 per cent as many in impounded water, 42 per cent in wells, and 10 per cent in the sewage samples, or ratios of coliforms to enterococci of approximately 5:1, 4:1, 2.5:1, or 10:1, respectively. The statistical independence of these figures was not established.

Enterococcus determinations in water should provide valuable supplementary data concerning pollution.

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American Trudeau Fellowships

The National Tuberculosis Association through its medical section, the American Trudeau Society, is offering fellowships in the field of respiratory diseases and tuberculosis. Candidates holding the degrees of M.D., Ph.D., or Sc.D. are eligible for awards making continuation of graduate study in the field possible. Graduate students working on a research project for an advanced degree other than M.D. may be eligible for the predoctoral fellowships also offered. Awards are determined by individual circumstances. December 1 is the next deadline for applications. Further particulars upon request from the Director of Medical Education, American Trudeau Society, 1790 Broadway, New York 19.

The Negative Binomial and distributions, based on similar underlying mathematical models, may be useful in fitting data obtained in biological and medical research. This article discusses these distributions and some of the mathematical models, and the application to some medical data is presented.

SOME APPLICATIONS OF THE NEGATIVE BINOMIAL AND OTHER CONTAGIOUS DISTRIBUTIONS

John Gurland, Ph.D.

1. Introduction

MANY OF THE statistical technics for the analysis of experimental data based on samples from Normal populations are sufficiently well developed to be regarded as standard tools. In fact, it is not uncommon practice for data from non-Normal populations to be transformed in order that the resulting distribution be sufficiently close to Normal for the standard technics to be applicable.

Much of the experimentation in the biological and medical sciences pertains to statistical distributions which are far from Normal. In fact, the distributions may be discrete. For example, the data may be numbers of insects on plants, or numbers of defective teeth in people's mouths, or numbers of sicknesses suffered by industrial workers. Even if we should try to approximate the distribution of numbers of defective teeth, say, by a continuous curve, its shape would in general be far from that of the Normal frequency curve.

There are, of course, continuous distributions which are also distinctly non-Normal. A typical example in the medical sciences is the distribution of survival times of patients cured by cancer therapy (cf. Boag[1]). Although continuous non-Normal populations are widely applicable and are of interest in themselves, they will not be included within the scope of the present paper. Our attention will be focused upon such discrete distributions as the Negative Binomial and other contagious frequency distributions. The concept of contagion with respect to frequency distributions will be described below.

2. The Negative Binomial Distribution (Pascal Distribution)

2.1 *Preliminary Remarks and Background*

Among the most well known discrete distributions are the Binomial, the Poisson, and the Negative Binomial. The theoretical connections between these distributions are so close that it is hardly convenient to discuss any one of them without referring to the others.

The Binomial distribution is ascribed to Jakob Bernoulli[2] who investigated it in some detail. It is called the Binomial

distribution because its probabilities may be obtained from the terms in the expansion

$$(q+p)^n = q^n + nq^{n-1}p + \frac{n(n-1)}{2!}q^{n-2}p^2 + \ldots + \frac{n(n-1)(n-2)\ldots(n-r+1)}{r!}q^{n-r}p^r + \ldots + p^n \quad (1)$$

Here $p(0<p<1)$ is the probability of a "success" in each trial, $q=1-p$ is the probability of a "failure," and n is the number of independent trials. The notation r! represents (r) (r-1) (r-2) . . . . (3) (2) (1) and the Binomial coefficients appearing in (1) are usually written as

$$\binom{n}{r} = \frac{n(n-1)\ldots(n-r+1)}{r!} \quad (2)$$

Thus, the probability that a Binomial variate X, say, assumes the value r is given by

$$P\left\{X=r\right\} = \binom{n}{r}p^r q^{n-r} \quad r=0, 1, 2, \ldots, n \quad (3)$$

An example of a fit of the Binomial to an observed distribution is shown in Table 1. The data are from Eisenhart and Wilson[3] and give the number of monocytes in 100 blood cells of a cow in 113 successive weeks. The observed frequencies appear in the second column and the expected frequencies based on a Binomial distribution appear in the third column. Some remarks on the methods of fitting a theoretical to an observed distribution will be made in Section 3. For the present it suffices to note there is at least some correspondence between the observed and the theoretical distributions in the second and third columns, respectively.

The Negative Binomial distribution is so called because the probabilities can be obtained from the terms in the expansion

$$(q-p)^{-k} = q^{-k}\left[1 + k\frac{p}{q} + \frac{k(k+1)}{2!}\left(\frac{p}{q}\right)^2 + \ldots + \frac{k(k+1)\ldots(k+r-1)}{r!}\left(\frac{p}{q}\right)^r + \ldots\right] \quad (4)$$

where $p>0$, $k>0$, and $q=1+p$. Thus, the probability that a Negative Binomial variate X assumes the value r is given by

$$P\left\{X=r\right\} = \left(\frac{1}{q}\right)^k \frac{k(k+1)\ldots(k+r-1)}{r!}\left(\frac{p}{q}\right)^r \quad r=0, 1, 2, \ldots \quad (5)$$

The following interpretation of this probability term is possible. If we imagine independent trials with $\frac{1}{q}$ as the probability of a "success" and $\frac{p}{q}$ as the probability of a "failure," then the expression in (5) is the probability that $r+k$ trials will be required to obtain k successes. Although this interpretation requires that k be a positive integer, there are interpretations arising from other mathematical models underlying this distribution which require merely that k be positive.

The Negative Binomial was formulated by Montmort[4] in 1714. Feller[5] calls the distribution given by (5) with k a positive integer a Pascal distribution in ref-

Table 1—Number of Monocytes in 100 Blood Cells of a Cow in 113 Successive Weeks (Data from Eisenhart and Wilson[3])

Monocytes in 100 Blood Cells r	Observed Frequency f	Expected Frequency (Binomial)	Expected Frequency (Poisson)
0	0	0.2	0.3
1	3	1.5	1.7
2	5	4.8	5.2
3	13	10.0	10.3
4	19	15.3	15.4
5	13	18.7	18.3
6	15	18.7	18.1
7	12	15.9	15.4
8	10	11.7	11.5
9	11	7.6	7.6
10	7	4.4	4.5
11	3	2.3	2.5
12	2	1.1	1.2
13+	0	0.8	1.0

Table 2—Distribution of Dental Caries in 12-Year-Old Children. Number of Smooth Surface Cavitation Counts (Data from Grainger and Reid[8])

Count Per Child r	Observed Frequency f	Expected Frequency (Pascal)*	Expected Frequency (Pascal)†	A_r	Expected Frequency (Poisson v Pascal)
0	63	52.6	61.2	100	57.9
1	29	31.6	29.2	71	26.7
2	12	21.5	18.8	59	19.6
3	15	15.2	13.1	44	14.8
4	8	11.0	9.6	36	11.1
5	9	8.0	7.1	27	8.4
6	5	5.9	5.4	22	6.3
7	4	4.4	4.1	18	4.7
8	6	3.2	3.2	12	3.5
9	2	2.4	2.4	10	2.6
10	3	1.8	1.9	7	1.9
11	3	1.3	1.6	4	1.4
12	2	1.0	1.2	2	1.0
13+	2	3.1	4.2	0	2.9
χ^2		14.2	10.0		10.1
$P(\chi^2)$		0.22	0.53		0.43

* Determined by method of moments.
† Determined by maximum likelihood.

erence to the mathematician Blaise Pascal.[7] By synecdoche we shall often refer to the Negative Binomial as a Pascal distribution (cf. Gurland[6]).

One of the important properties of this distribution is that its variance ($kp + kp^2$) exceeds its mean (kp). This property is sometimes referred to as overdispersion.

An example of fitting the Negative Binomial to an observed frequency distribution is shown in Table 2. The data are taken from Grainger and Reid[8] on the distribution of dental caries among 12-year-old school children. The second column in the table gives the observed distribution of smooth surface cavitation counts and the third column the expected frequencies on the basis of a Negative Binomial determined by the method of moments. The fourth column exhibits the expected frequencies calculated from a Negative Binomial determined by the method of maximum likelihood. (Remarks on methods of estimating the parameters of a distribution in attempting to fit observed data will be made in Section 3.) It will be noted there is some correspondence between the observed frequencies in the second column and the expected frequencies in the third and fourth columns. Further, the correspondence between the observed distribution and the Pascal distribution determined by moments does not appear as close as the correspondence between the observed distribution and the Pascal distribution determined by maximum likelihood.

The relative mathematical simplicity in computing probabilities based on the Negative Binomial is probably a contributing factor to its widespread use as a contagious distribution. Further aspects of this distribution will be considered below. We shall now turn our

attention briefly to the Poisson distribution.

The distribution known as the Poisson was considered by Simeon Poisson[9] in 1837. This distribution may be regarded as a limiting case of the Binomial distribution in (3) by letting $n \to \infty$, $p \to 0$, while keeping $np = \lambda$, a constant. The expression in (3) then becomes

$$P\left\{X = r\right\} = e^{-\lambda}\frac{\lambda^r}{r!} \qquad r = 0, 1, 2, \ldots . \quad (6)$$

It may be remarked that for a Poisson variate the variance (λ) is equal to the mean (λ) whereas for a Pascal variate the variance exceeds the mean.

An example illustrating the fitting of a Poisson distribution to observed frequencies is given in Table 1. These data were considered above in fitting the Binomial distribution. If the same data are fitted by a Poisson distribution, we obtain the expected frequencies shown in the fourth column. It will be observed the expected frequencies corresponding to the Binomial and Poisson distributions are very close. This results from the large value of n(100) and the small value of p (0.0596) for the Binomial. The mean of the Poisson is $\lambda = np = 5.96$.

It may also be remarked that the Poisson may be regarded as a limiting case of the Negative Binomial distribution by letting $k \to \infty$, $p \to 0$ in (5) while keeping the mean constant and equal to λ, say.

2.2 *Apparent Contagion (Compound Poisson)*

It was pointed out by Feller[12] there are two kinds of contagion, which he refers to as "true contagion" and "apparent contagion."

Apparent contagion is the result of heterogeneity arising from distributions on the parameters involved in a population. Thus, in the case of the Poisson distribution (6), if the values of the parameter λ are obtained randomly through some statistical population, the resulting "mixture" of Poisson distributions would afford an example of apparent contagion. Such a distribution obtained in this manner is called a compound Poisson distribution (cf. [12]). This notion was developed by Greenwood and Yule[13] and has been widely applied in studies on accident proneness (cf. Arbous and Kerrich[14]).

If the parameter λ in (6) is a random variate with a Gamma frequency function given by

$$p(\lambda) = \frac{\alpha^\beta}{\Gamma(\beta)} e^{-\alpha\lambda}\lambda^{\beta-1} \qquad \lambda > 0,\ \alpha > 0,\ \beta > 0 \quad (7)$$

the resulting compound Poisson distribution can be shown (cf. [6]) to have probabilities of the form

$$P\left\{X = r\right\} = \frac{\beta(\beta+1)\ldots(\beta+r-1)}{r!} \left(\frac{\alpha}{1+\alpha}\right)^\beta \left(\frac{1}{1+\alpha}\right)^r \quad (8)$$

On setting $\beta = k$, $p = \frac{1}{\alpha}$, and $q = \frac{1+\alpha}{\alpha}$, it is evident that (8) becomes identical with (5), the probability corresponding to a Negative Binomial distribution. Consequently the Pascal may be regarded as a compound Poisson distribution, wherein the compounding has been effected upon the parameter λ through a Gamma distribution. As a matter of interest the shape of the Gamma frequency curve (7) has been indicated in Figure 1 for a few combinations of values of α and β.

The Negative Binomial fitted to the data on dental smooth surface cavitation counts in Table 2 affords an example of the possibility of interpreting this distribution as a compound Poisson. The distribution might be regarded as arising from an aggregate of Poisson populations with mean values following a distribution of the form (7).

2.3 *True Contagion*

In the case of true contagion the probability of a "favorable" event depends on the occurrence of previous favorable events. Feller[16] discussed the following

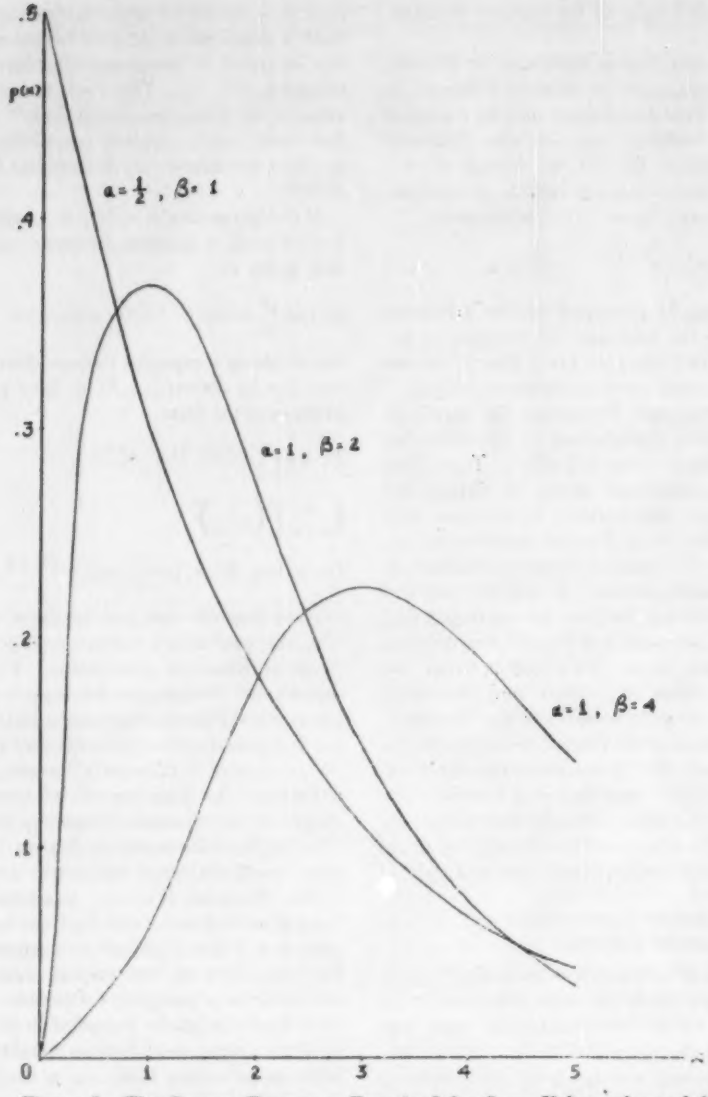

Figure 1—The Gamma Frequency Function[7] for Some Values of α and β

mathematical model due to Polya[17] which is based on true contagion and leads in a relatively simple way to the Negative Binomial distribution.

Suppose an urn contains N balls of which Np are white and Nq are black $(p+q=1)$. n successive drawings of a ball are made from the urn under the

procedure that after each drawing the ball is replaced and in addition $N\delta$ balls of the color last drawn are added to the urn. Let X denote the number of white balls in n successive drawings. Then the probability that X assumes the value r is given by

$$P\left\{X=r\right\}=\binom{n}{r}\frac{p(p+\delta)(p+2\delta)\ldots.(p+[r-1]\delta)q(q+\delta)(q+2\delta)\ldots.(q+[n-r+1]\delta)}{1(1+\delta)(1+2\delta)\ldots.(1+[n-1]\delta)} \quad (9)$$

If we let $n\to\infty$, $p\to 0$, $\delta\to 0$, while keeping $np=\lambda$, $n\delta=\eta$ constant, then (9) becomes

$$P\left\{X=r\right\}=\frac{k(k+1)\ldots.(k+r-1)}{r!}\left(\frac{\eta}{1+\eta}\right)^r\left(\frac{1}{1+\eta}\right)^{\frac{\lambda}{\eta}} \quad (10)$$

On setting $\frac{\lambda}{\eta}=k$, it is evident from (5) that this is a Negative Binomial distribution. Thus, two different mathematical models based on apparent and true contagion, respectively, lead to the Negative Binomial distribution.

The data in Table 2 also afford an example of the possibility of interpreting the Negative Binomial as arising from true contagion. For it is plausible to assume that the presence of a dental cavity in a child's mouth increases the probability of another cavity.

In the light of two types of contagion providing a possible explanation of the relevance of the Negative Binomial distribution it is apparently impossible from the data to distinguish between the two types. It may be remarked, however, that in the case of multidimensional forms of the Negative Binomial some progress has been made in this direction (cf. Bates and Neyman,[18] Arbous and Kerrich[14]). An interesting study on accident proneness with some applications of the bivariate Negative Binomial distribution has been made by Adelstein.[19]

2.4 *Model of Random Colonies (Generalized Poisson)*

Another widely used mathematical model which leads to the Negative Binomial distribution is based on a random distribution of colonies. As an example, in counts of soil bacteria in microscopic fields (cf. Jones, Mollison, and Quenouille[20]), if the number of bacterial colonies per field follows a Poisson distribution and the number of bacteria per colony a Logarithmic distribution, then the distribution of bacteria per field is a Negative Binomial.

An example which occurs in entomology is concerned with the counts of larvae over the plots in a field (cf. Neyman,[21] Skellam,[22] Evans[23]). The larvae are hatched from egg masses which appear at random over the field. If the number of egg masses represented on a plot under observation follows a Poisson distribution, and if the survivors from the egg masses follow a Logarithmic distribution, then the resulting distribution of larvae on plots will be a Negative Binomial.

In technical terms, on the basis of the above model, the Negative Binomial may be referred to as a generalized Poisson distribution (cf. Feller[12]) in which the "generalizer" (cf. Gurland[11]) is a Logarithmic random variable.

The Logarithmic distribution referred to above has probabilities which are the terms in the logarithmic series

$$-a\log(1-\tau)=a\left[\tau+\frac{\tau^2}{2}+\frac{\tau^3}{3}+\ldots.\right] \quad (11)$$

where $0<\tau<1$ and $a\log(1-\tau)=-1$. Thus, for a Logarithmic random variable X, say, $P\left\{X=0\right\}=0$ and

$$P\left\{X=r\right\}=a\frac{\tau^r}{r};\ r=1,2,\ldots. \quad (12)$$

This distribution is ascribed to Fisher[10] and is usually written in a form such as (12) in which the zero count (corre-

sponding to $P\{X=0\}$) is excluded. It can be shown that this distribution is actually a limiting case of the Negative Binomial when $k \to 0$ and the zero count is excluded.

A Logarithmic distribution in which the zero count is not excluded has been considered by Katti and Gurland.[15]

There are other models besides those considered in 2.2, 2.3, and the present section which lead to the Negative Binomial distribution (cf. Anscombe,[24] Kendall[28]) but which are omitted here for brevity.

3. Estimation and Fitting

One of the simplest methods for estimation of the parameters in the Negative Binomial and other distributions is the method of equating the first few sample moments to the corresponding theoretical moments and solving the resulting equations for the unknown parameters. This is known as the method of moments. The number of moments used is the same as the number of unknown parameters.

In the case of the Negative Binomial distribution (5) the equations using the first two moments are

$$kp=\bar{x}; \qquad kp(1+p)=s^2 \tag{13}$$

where $\bar{x}$, s^2 are the sample mean and variance, respectively, obtained in the usual manner

$$N\bar{x}=\sum_{i=1}^{N} x_i \; ; \; Ns^2=\sum_{i=1}^{N} (x_i-\bar{x})^2$$

where N is the total number of observations.

As an example, the observed distribution in Table 2 yields $\bar{x}=2.527$, $s^2=10.642$; and the estimates of p and k obtained by solving the two equations in (13) are $p=3.210$ and $k=0.787$. These are the values of the parameters used in calculating the expected frequencies shown in the third column of the table.

Another comparatively simple method sometimes used is to equate the first few sample frequencies to the corresponding expected frequencies and solve the resulting equations for the unknown parameters (cf. [23,24]). This method might be called the method of frequencies. The number of frequencies used is, of course, the same as the number of unknown parameters.

In the case of the Negative Binomial distribution, using the first two frequencies, the equations to solve for p and k become

$$f_0=Nq^{-k}; \; f_1=Nkpq^{-k-1} \tag{14}$$

where f_0, f_1 are the observed frequencies of zero and one counts, respectively. From the data in Table 2, $f_0=63$, $f_1=29$, and $N=163$.

Still another relatively simple method sometimes used is to equate the first few sample moments and sample frequencies to the corresponding theoretical moments and frequencies. This is, in effect, a combination of the method of moments and the method of frequencies. Again, of course, the number of equations to be solved must be the same as the number of unknown parameters.

The efficiency of the above methods will depend on the true values of the parameters to be estimated. These methods may be reliable in some cases and unreliable in others (cf. Fisher,[39] Anscombe,[24] and Evans[23]) but are used when a simple method of estimating is desired.

A fully efficient method of estimating the parameters is the procedure known as maximum likelihood (cf. Fisher[26]). The required computations are usually not as simple as for the preceding methods, but the method of maximum likelihood is used when it is desired to extract all the possible information from the data. In the case of the Negative Binomial the equations to be solved for p and k are (cf. Fisher[27])

$$\sum_{r=0}^{\infty}\left(\frac{A_r}{k+r}\right)=N\log(1+p); \; \bar{x}=kp \tag{15}$$

where $A_r = f_{r+1} + f_{r+2} + \ldots$ and the f_r are the observed frequencies.

The first equation in (15) requires an iterative procedure for its solution (cf. Bliss[28]). For the data in Table 2 the values of A_r are shown in the fifth column and the solution of (15) is $p = 4.299$, $k = 0.588$. The corresponding frequencies based on this Negative Binomial are shown in the fourth column of Table 2.

It may be remarked that the method of estimation known as minimum χ^2 (cf. Cramér[29], Neyman[30]) will also yield estimators efficient in the same sense as those obtained by maximum likelihood. Usually the required computations are also rather involved as in the case of maximum likelihood, but in some instances the computations are simpler. As an example of the application of the minimum χ^2 method to some other distributions the reader is referred to Berkson.[31,32]

A criterion commonly used for testing the goodness of fit to the observed frequencies by a theoretical distribution is the χ^2 statistic,

$$\chi^2 = \Sigma \frac{(\text{observed} - \text{expected})^2}{\text{expected}} \qquad (16)$$

due to Karl Pearson.[33] If the value of this statistic turns out to be not unduly large in the sense that the probability of obtaining at least such a value is above 5 per cent, the fit is not considered unsatisfactory. This does not, however, necessarily imply acceptance of the hypothesis of the given theoretical distribution (cf. Cochran[34]) especially if the data are scanty, but should rather be interpreted cautiously as some evidence in favor of the hypothesis tested.

The χ^2 statistic is also sometimes used to compare the closeness of fit to an observed frequency distribution by several different theoretical distributions (cf. Bliss,[28] Maguire, Brindley, and Bancroft,[36] Beall and Rescia[35]). If the χ^2 value using one distribution is consistently smaller than the value using another, this would suggest grounds for preferring the one distribution to the other, but again one should be cautious in making this inference.

To provide an illustrative example of the use of the χ^2 statistic, we return again to Table 2. For a fit by the Pascal distribution based on the method of moments the χ^2 statistic has the value 14.2. To obtain the probability of getting a value at least as large as this, we refer to a table of the χ^2 distribution (cf. Cramér[33]) and find the probability corresponding to 11 (i.e., $14 - 3$) degrees of freedom. The number of degrees of freedom is obtained by subtracting from the number of categories (14) one plus the number of parameters estimated. This leads to a probability value of approximately 22 per cent as shown at the foot of the third column in Table 2. The corresponding χ^2 value using a fit based on maximum likelihood is 10.0 and the probability is accordingly 53 per cent. The decrease in the χ^2 value for the fit based on maximum likelihood is substantial. The fits based on both the above methods are not rejected, although the fit based on maximum likelihood appears preferable.

The distribution of the χ^2 statistic (16) is really not exactly that of a χ^2 random variable; and especially for probabilities corresponding to the tail of the distribution some care is required in carrying out the test. Some writers recommend pooling frequencies of categories which have fewer than five or ten observations, but the inflexible use of this rule may be harmful (cf. Cochran[34]).

4. Other Contagious Distributions

It has been pointed out that the Negative Binomial distribution may be regarded as a compound Poisson (Section 2.2) or as a generalized Poisson distribution (Section 2.4). In the notation used

by Gurland[6] the Negative Binomial can be expressed as follows:

Poisson Λ Gamma (Compound Poisson) (17)

Poisson v Logarithmic (Generalized Poisson) (18)

The symbol Λ signifies that the Poisson distribution preceding it is being compounded and that the Gamma distribution succeeding it is employed as a "compounder" on the parameter λ, say, of the Poisson. As an example of a different compounder

Poisson Λ Poisson (19)

signifies that the parameter in the Poisson on the left of Λ itself follows a Poisson distribution (distribution on the right of Λ). This compound Poisson distribution given by (19) is known as the Neyman Type A distribution (cf. Feller,[12] Neyman[21]) and has been used widely in fitting entomological data (cf. Beall[37]).

Other examples of compound distributions are

Binomial Λ Poisson (20)

Pascal Λ Poisson (21)

The distribution in (20) is a compound Binomial with the Poisson distribution as a compounder, and the distribution in (21) is a compound Negative Binomial with the Poisson distribution as a compounder. To avoid ambiguity in (20) and (21) as regards which parameters are involved in the compounding process, we might write Binomial $\overset{\Lambda}{n}$ Poisson and Pascal $\overset{\Lambda}{k}$ Poisson, respectively, to emphasize that it is the parameter n in (3) and the parameter k in (5) which follows the Poisson distrbution as the compounder in these distributions.

The symbol v in (18) signifies that the Poisson distribution which precedes it is generalized through the Logarithmic distribution which succeeds it. In terms of the descriptive language employed in Section 2.4 we can interpret (18) by saying the Poisson distribution preceding v is the distribution of colonies and the Logarithmic distribution succeding v is the distribution of individuals per colony. Some examples of other generalized Poisson distributions are

Poisson v Poisson (22)

Poisson v Binomial (23)

Poisson v Pascal (24)

As Feller[12] has pointed out, the generalized Poisson in (22) is also a Neyman Type A distribution. By a theorem in Gurland[6] it can readily be seen that the compound Binomial in (20) and the generalized Poisson in (23) are the same form of distribution; further, the compound Pascal in (21) and the generalized Poisson in (24) are the same form of distribution. Thus, the models in Sections 2.2 and 2.4 are equivalent, in a certain sense, for the class of distributions considered by Gurland.[6]

Some examples of fitting other contagious distributions than the Negative Binomial are presented in Tables 2 and 3. In Table 2, the sixth column shows the expected frequencies on the basis of a Pascal Λ Poisson distribution fitted to the data. As shown at the foot of the sixth column the χ^2 statistic has the value 10.1; and the corresponding probability obtained from the χ^2 distribution with 10 degrees of freedom is 43 per cent.

It may be remarked that the method used in estimating the three parameters in the Pascal Λ Poisson distribution was as follows: The first two sample moments were equated to the first two theoretical moments, and the ratio f_1/f_0 of the first two observed frequencies was equated to the corresponding ratio of theoretical frequencies. This is a combination of the method of moments with a modification of the method of frequencies. For

this distribution the method is much simpler than the method of maximum likelihood; further, as apparent from Table 2 the fit is about as close as that accomplished by the Negative Binomial distribution based on maximum likelihood.

On assumption of a Pascal Λ Poisson distribution underlying these data two interpretations, inter alia, are possible. First, the distribution of smooth surface cavitation counts per child may be regarded as a compound Pascal with the different values of k following a Poisson distribution. A second interpretation regards the Pascal Λ Poisson as a Poisson v Pascal. Under this interpretation the number of defective teeth per child (cf. colonies per field) could be regarded as following a Poisson distribution, and the number of carious smooth surfaces per defective tooth (cf. individuals per colonies) could be regarded as following a Pascal distribution.

Table 3—Sickness Distribution of 302 Shunters for Period 1943-1947 Data from Adelstein[19]

Number of Sicknesses r	Observed Frequency f	Expected Frequency (Pascal)*	Expected Frequency (Pascal)†	Expected Frequency (Neyman Type A)	Expected Frequency (Binomial Poisson)
0	25	8.1	11.6	28.0	20.5
1	7	15.3	18.6	8.1	5.8
2	15	20.4	22.3	14.7	13.9
3	23	23.3	23.9	19.2	20.3
4	23	24.5	24.0	21.0	21.8
5	22	24.4	23.1	21.2	21.6
6	18	23.4	21.7	20.9	22.2
7	19	21.8	20.0	20.3	22.7
8	22	19.9	19.0	19.4	21.8
9	23	17.8	17.0	18.1	20.1
10	14	15.7	15.1	16.6	18.3
11	12	13.7	13.2	14.9	16.4
12	17	11.9	11.5	13.2	14.3
13	11	10.2	10.0	11.5	12.2
14	6	8.7	8.7	9.9	10.3
15	10	7.3	7.4	8.4	8.5
16	3	6.2	6.4	7.1	7.0
17	7	5.2	5.4	5.9	5.6
18	3	4.3	4.6	4.9	4.4
19	4	3.6	3.9	4.0	3.5
20	1	3.0	3.3	3.2	2.9
21	4	2.5	2.8	2.6	2.1
22	4	2.0	2.4	2.0	1.6
23	3	1.7	2.0	1.6	1.2
24	3	1.4	1.7	1.3	0.9
25+	3	5.7	2.4	4.0	2.1
χ^2		60.6	40.7	18.7	26.7
$P(\chi^2)$		0.001	0.01	0.72	0.22

* Determined by method of moments.
† Determined by maximum likelihood.

A further example is afforded by the data in Table 3 giving the frequency of sicknesses among 302 railway shunters over the period 1943-1947. These data are taken from Adelstein.[19] The second column of Table 3 shows the observed frequencies and the third column the expected frequencies based on a Negative Binomial determined by the method of moments. The fourth column shows the expected frequencies based on a Negative Binomial determined by the method of maximum likelihood and the fifth column shows the expected frequencies based on a Neyman Type A distribution determined by the method of moments. The sixth column shows the expected frequencies based on a Binomial ∧ Poisson determined by the method of moments with the parameter n taken as 7.

It is apparent from these results the Negative Binomial provides a poor fit even when determined by maximum likelihood. On the basis of the χ^2 statistic the Binomial ∧ Poisson provides a better fit and the Neyman Type A the best fit. A possible explanation of the poor fit by the Pascal distribution is its unimodality and the multimodality of the observed frequency distribution, with modes at r=0, 3, 4, 9, and so forth. The Binomial ∧ Poisson and the Neyman Type A are, for certain values of the parameters, multimodal distributions and hence better adapted to situations of this kind.

Conclusion

The Negative Binomial and other distributions based on similar underlying mathematical models may be effective in fitting various types of data arising in biological and medical research. One may ask, of course, what is the purpose of trying to fit data by distributions such as those considered.

In the case of samples obtained from a population in which Normality is assumed the statistical tests performed do not usually include a test of fit because of the experience of a reasonably good fit by the Normal distribution. Furthermore, many statistical tests based on Normal theory enjoy the property of robustness (cf. Box[38]) which implies only slight distortions in the behavior of the tests when the underlying population is non-Normal.

In the case of data from discrete distributions fitting may be desirable to verify the form of the underlying population assumed. With a knowledge of the underlying population it is possible at least theoretically to construct tests or estimate parameters for the purpose of making statistical inference.

In fitting a distribution to a given set of biological data, say, it is also important for the mathematical model underlying the theoretical distribution to have a reasonable biological meaning. The contagious distributions, including the Negative Binomial, offer interesting possibilities in this direction.

Summary

The Negative Binomial distribution is discussed in its relation to the Binomial and Poisson distributions. Some mathematical models which lead to it are also discussed. These include the compound Poisson and generalized Poisson distributions, and it is shown how the Gamma and Logarithmic distributions become involved in these representations. Further, a model based on true contagion is shown to yield the Negative Binomial as a limiting case. Other compound and generalized distributions distinct from the Negative Binomial, but based on some of the models which lead to it, are presented and fitted along with the Negative Binomial to some medical data. A few remarks on estimation and fitting are also included.

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Journal of Public Health

EDITORIALS

A Modern Health Code for New York City

THE ENACTMENT of the New York Metropolitan Health Bill of 1866 was a turning point in the history of public health not only in New York City, but in the United States as well. A basic problem which concerned the pioneer public health workers was the lack of adequate administrative machinery. Replacement of a haphazard administration by an efficient one was as essential to the development of a complicated urban, industrial society as the provision of new scientific knowledge. Indeed, it was the existence of a stable administrative framework which facilitated the application of new scientific knowledge in public health practice. In the United States such a foundation was created for the first time in New York City, thus setting an example to be followed. According to Stephen Smith, it was "declared officially and judicially to be the most complete piece of health legislation ever placed on the statute books," and it previsaged the creation of new, effective health departments in states and municipalities.

For almost a hundred years the activities of the New York City Health Department have rested on the basic structure established in the 1860's. Since then the department has pioneered in various fields of community health—among others the health of mothers and children, public health laboratory services, and health education. The legal expression of this structure and its activities has been the Sanitary Code which was, of course, revised and amended on various occasions in order to take into account changing conditions and new knowledge. The last major revision was carried out in 1914.

Now the Board of Health of the City of New York has once again made an important contribution to public health administration and law by completely revising the former Sanitary Code. On March 23, 1959, the board adopted the New York City Health Code, the product of five years of work by official and private organizations and individuals. The story of this enterprise and its results are presented elsewhere in this issue (pp. 1313-1328).

The new code embodies modern concepts of public health and represents the public health of our time. Characteristic and symbolic is the change in the title from "Sanitary" to "Health Code." Redolent of the early public health movement,

the term "sanitary" reminds one of sewerage, proper water supplies, and the fight to obtain pasteurized milk. The substitution of the term "health" symbolizes the expansion of the public health horizon as well as the emphasis on health promotion which tends more and more to characterize the public health of today. Noteworthy also is the tendency to diminish rigidity of standards and to work with performance standards. Furthermore, the new code is pervaded by still another tendency; it is attuned not alone to current matters, but as well to the future. From the evidence at hand it appears that the New York City Health Code will serve the community at least as long and as well as its predecessor and in all probability better. While the code is obviously not directly applicable to other communities, health workers and public officials concerned with such matters cannot afford to overlook this important contribution to public health.

The American Sanitary Engineer: A Profile

FROM THE EARLIEST TIMES, environmental sanitation has been a basic area of community action in the interest of health. As modern public health took form, it saw itself confronted basically with engineering problems — lack of drainage, polluted water supplies, and inadequate means for removing refuse from houses and streets. With the installation of proper drainage and adequate public water supplies at least in urban communities the sanitary engineer emerged as an essential figure on the health scene. And he has remained so despite the appearance of newer, possibly more glamorous fields for community health action.

The road to a physical environment conducive to good health is not easy. Problems of public health are in large measure man-made. Having cleared away one problem, man finds that he has inadvertently created new ones. As industrialization proceeds at an increasing pace and with greater urgency, pollution of rivers and streams and of the air confront communities with tasks that require the skills and the knowledge of the sanitary engineer. Similarly, new problems arise with the production and distribution of food for mass consumption—problems of preservation, packaging, transportation, and vending. Clearly, the sanitary engineer occupies a place of high importance in the public health field and it is a matter of considerable significance to know as much as we can about this public health worker.

A report on sanitary engineering manpower[1] prepared by the Office of Engineering Resources, Public Health Service, offers a valuable group picture of the American sanitary engineer in 1956-1957. This "profile" will serve a very desirable purpose if it leads more people to consider certain questions raised by the data it contains. It is estimated that there are approximately 6,000 sanitary engineers in the United States. In terms of the problems which are being conjured up by the changing complexity of the environment, how many sanitary engineers will we need in the next decade, or 20 years hence? What training should this engineer have? How specialized should it be? Are enough recruits entering the field to replace the "old-timers"? For answers to these and other related questions, this report can serve as a useful point of departure.

For example, the age composition of the group is a matter of considerable interest. Approximately 4,000 sanitary engineers were studied in this survey; these represent two-thirds of the estimated total number of such engineers in the country. The median age of the survey group is 44.5 years. About the same number of sanitary engineers are

to be found in the under 35 and over 55 age groups. However, in 1956, when the survey was made the replacement factor was not large enough in terms of the increasing attrition rate in the upper age groups and in terms of an engineering specialty which is expanding its functions and responsibilities. With such new areas of action as air pollution and radiological health presenting widening professional perspectives, more young graduate engineers must be attracted to this field. Otherwise it will not be possible to cope with the need for service to growing populations and to replace those who leave the field because of death, retirement, or transfer.

Another point. Almost two-thirds of the respondents in the survey stated that the fields of water supply, waste treatment, and control of water pollution were the primary areas of academic specialization or professional experience. On the other hand, only 1 per cent and half of 1 per cent claim major specialization in engineering concerned with air pollution and radiological health, respectively. Are enough men being trained to cope with these problems?

There are many other facets on which this report sheds light: location of sanitary engineers, education and years of work experience, specialization within the sanitary engineering group, functions performed, income, and membership in national professional societies. Each of these topics raises questions that deserve serious consideration. Thus, the great majority of sanitary engineers were trained as civil engineers; what are the possibilities for those with training as chemical engineers or electrical engineers to play an increasing role in environmental sanitation?

While the report makes no elaborate comparisons with comparable data from similar studies in other engineering disciplines it serves a useful purpose as a source document. The data contained in it will be useful to health officers, engineering educators, directors of schools of public health, administrators of public works, as well as others concerned with the public health and engineering needs of our country.

A final point of interest to members of the American Public Health Association is that the study of the American sanitary engineer follows after a decade the study carried out by the Association in 1949. Interested persons may well wish to make a comparison of these two documents.

1. Sanitary Engineering Manpower. PHS Pub. No. 703. Washington, D. C.: Gov. Ptg. Office (in Press).

ASSOCIATION NEWS

EIGHTY-SEVENTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J.—OCTOBER 19–23, 1959

Governor Nelson A. Rockefeller to Speak at Atlantic City

The distinguished governor of the State of New York will address the opening session of the Eighty-Seventh Annual Meeting in Atlantic City, on Monday, October 19, at 10:00 a.m.

The preliminary program of the scientific sessions of the Annual Meeting was published in the September Journal. Governor Rockefeller's acceptance came too late to meet the printer's deadline.

The opening session will begin promptly at 10:00 o'clock in the Ballroom, Convention Hall, not at 10:15 as announced in the preliminary program. Registration in Convention Hall will open at 8:30.

Western Continuation Education

The Western Regional Office of the Association, in cooperation with the Western Branch, is developing a region-wide program of continuing education in public health. For this purpose a staff member has been added to the regional office in order to give direct assistance to groups in the field planning continuing education activities, and in bringing them the resources and assistance of the committee on continuing education of the Western Branch and of the University of California. The new staff member, Donald Hufhines, M.P.H., has for this purpose been appointed full-time lecturer on the faculty of the University of California School of Public Health. He comes to the regional office from his former position as health education director, Orange County (Calif.) Health Department.

Open Meeting on Resolutions

The Committee on Resolutions invites all members of the APHA in attendance at the Annual Meeting to the public reading of all policy resolutions submitted to it before August 18, the 1959 deadline date. (As reported in the Journal of February, 1959, no resolutions dealing with policy are accepted later than 60 days before the first Governing Council meeting at the Annual Meeting.) The reading will take place on Monday, October 19, 1:30 p.m., in the Ballroom, Ritz-Carlton Hotel.

This year the new rules of procedure for handling policy resolutions enabled the committee to review resolutions before the Annual Meeting. As a result of the early meeting it was possible to put many of the resolutions in tentatively final form. These have been distributed to members of the Governing Council for comment. All resolutions will be put into final form before presentation to the Governing Council on October 21.

Open Meetings of Governing Council

APHA members who will be in attendance at the Annual Meeting at Atlantic City are welcome and urged to attend

the meetings of the Governing Council, the APHA policy-making body. The Governing Council meets Sunday, October 18, at 2:30 p.m., and Wednesday, October 21, at 2:30 p.m., both times in the Renaissance Room, Ambassador Hotel.

Training Credit for Navy Reserves

The Navy will inaugurate its own symposium on naval public health at this year's Annual Meeting. Course credit arrangements for naval medical reserve personnel will be similar to those for Army Medical Service reserve personnel. At the past three Annual Meetings the latter have been eligible under certain conditions to earn training and retirement point credits for attendance at designated courses in the four-day Military Public Health Symposium. As with Army reserve personnel, naval medical reserve personnel will now be able to obtain up to four point credits by attendance at their symposium. The specific sessions approved for both Army and Navy Medical Services are listed in the front part of the Annual Meeting program.

Health Research in Massachusetts

The Massachusetts Health Research Institute came into being in May, 1959. It is to provide for "more extensive research on the causes, nature and treatment of disease and disorders . . . of particular importance to public health."

The institute, financed through private funds, is set up to strengthen and coordinate the various research programs of the Massachusetts Public Health Department and other health departments and agencies throughout the commonwealth.

State Health Commissioner Alfred L. Frechette, M.D., emphasized that the institute should be a valuable addition to the state's program of combating health problems. "We must still," he said, "penetrate the curtains of darkness in the fields of heart disease, cancer, mental illness, the rheumatic diseases, allergies, eye diseases, viruses, infant mortality, and accidents. The Massachusetts Health Research Institute should assist in making our state second to none in medicine and public health."

In addition to Dr. Frechette and Governor Furcolo, the organizers and directors of the institute are drawn from the fields of medicine, medical and public health education, labor, law, government, and business.

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

SOCIETY AND SECRETARY

ALABAMA PUBLIC HEALTH ASSOCIATION, Ralph Roberts, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, J. Rex James, Maricopa County Health Dept., Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, James C. Malcolm, M.D., President, Alameda County Health Dept., Oakland
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Dorothea Hansen, City Health Dept., Los Angeles 12
COLORADO PUBLIC HEALTH ASSOCIATION, Alice de Bruyn Kops, 4660 S. Delaware, Englewood
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Shirley Thayer, R.N., 61 Arnold Way, West Hartford 7
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
HAWAII PUBLIC HEALTH ASSOCIATION, Alison MacBride, R.N., 510 S. Beretania St., Honolulu 13
IDAHO PUBLIC HEALTH ASSOCIATION, Charles Hammond, P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Gale E. Coons, State Board of Health, Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Lloyd Coe, Iowa Hospital Association, 1012 Liberty Bldg., Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, W. W. Willmore, Kansas Tuberculosis and Health Assn., 1134 Topeka Ave., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Peggy Fisher, 620 S. Third St., Louisville 2
LOUISIANA PUBLIC HEALTH ASSOCIATION, Lucille Godelfer, State Dept. of Health, New Orleans 7
MARYLAND PUBLIC HEALTH ASSOCIATION, Lillian B. Davis, Sc.D., Department of Education, Baltimore
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Case, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Marjorie Delavan, 1817 West St. Joseph St., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Thomas S. Willett, Montana Public Health District 1, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Emily Brickley, 1004 Capitol Bldg., Lincoln
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 2066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Frances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mrs. Kathleen Boland, Rensselaer County Health Dept., Troy
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Russell E. Lee, P. O. Box 231, Portland 7
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acín, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Helen W. Wiesmann, 1220 E. Broad St., Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Tom Drummey, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Katherine L. Brown, West Virginia State Dept. of Health, Charleston 5
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept., of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, Guy Tate, Jr., Jefferson County Health Dept., Birmingham, Ala.
WESTERN BRANCH, APHA, Robert G. Beaumier, 1309 Smith Tower, Seattle, Wash.

Georgia Increases Membership

At the 30th annual meeting of the Georgia Public Health Association, May 10-13, a 12 per cent increase in membership during the year and a 10 per cent increase in attendance at the annual meeting were reported. Two general sessions and 14 section meetings were held, five of which were joint sessions.

Among the guest speakers at the meeting were Bruno Gebhard, M.D., director of the Cleveland Health Museum, who reviewed the experience with health museums in the United States and made some prophecies as to the direction of health education in the future. C. G. Southard, M.D., chief of the Community Services Branch, National Institute of Mental Health, brought the final general session up to date on recent progress in mental health.

By way of some of the newer developments, Ted Wetzler of the Chilean Iodine Educational Bureau indicated some of the developments in the use of

iodophors in sanitation. A Canadian, F. S. Thatcher, Ph.D., chief of the Microbiology Section of the country's Food and Drug Directorate, discussed public health aspects of recent developments in the food industry. All other program participants were local Georgia talent.

J. F. Hackney, M.D., Fulton County health officer, was succeeded in the presidency by Rebecca Broach, M.P.H. Other officers are:

Secretary—Carl Fox, executive director, Georgia Tuberculosis Association

Treasurer—Eva Mae McDaniel

Representative to the APHA Governing Council—Dixon R. Olive, Jr., M.S.S.E., district public health engineer, Columbia

The 1960 meeting is scheduled for Savannah, May 16-18.

Communicable Disease Not Beaten

The Indiana Public Health Association, at its 13th annual meeting in Indianapolis on May 7-8, by-passed atomic radiation, medical care plans, and other new problems in the here-or-the-tomorrow to spotlight communicable disease control. Staphylococcal infections, the demography of communicable disease, the future of its control administration, and the relation of vectors all came in for discussion. The Indiana Health Officers Association, meeting conjointly, were also concerned with staphylococcus and immunization, as well as the state's health legislation.

To supplement the discussions there were demonstrations of public health, clinical research, and medical laboratory facilities in the State Health Department's Bureau of Laboratories and in the Indiana University Medical Center.

Robert Yoho, M.P.H., director of health education, records, and statistics, State Health Department, was succeeded in the presidency by C. T. Mayfield, D.D.S. Other new officers are:

President-Elect—Hester Beth Bland, M.S., H.S.D., consultant, Health and Physical Education, Indiana State Board of Health

Vice-President—Louis E. How, M.D., health officer, St. Joseph County Health Department

Secretary—Gale F. Coons, M.P.H., health educator, Indiana State Board of Health

Treasurer—Samuel H. Hopper, Ph.D., professor, Department of Public Health, Indiana University Medical School

Representative to the APHA Governing Council—Samuel H. Hopper, Ph.D.

Ohio Seeks an Ultimate Goal

The Ohio Public Health Association met in Columbus May 19-20 with more than 400 in attendance. Two general sessions and an afternoon of five section meetings, involving eight sections and a luncheon, made up the meeting.

At the technical general session the keynote speaker was Morey R. Fields, Ed.D., director, Bureau of Health Education, New York City Health Department. In discussing health department goals in view of the society of today and tomorrow, Dr. Fields made a plea for rugged individualism in health, for recognition of the whole man, for joint community study and planning without "vested-interest hats" and "desire for acclaim coats," for imagination and daring, rather than conformity in setting and achieving goals.*

Speaker at the luncheon session was Berwyn F. Mattison, M.D., executive director, APHA. He detailed the present organization of the parent association and the services available from it. Other speakers featured in the reports of the meeting were Edgar Dale, Ph.D., professor of education, Ohio State University, and audiovisual authority, on "Common Concerns, the Key to Communication," and Delbert Oberteuffer, Ph.D., president, American School Health

* The Ohio State Health Department has reproduced Dr. Field's paper for distribution to OPHA members and others. It is possible that it may be available in limited quantities to readers of this Journal; 306 Ohio Departments Bldg., Columbus 15, Ohio.

Association, who moderated the reactor panel following Dr. Fields' talk.

In addition to election of officers a number of awards were presented at the business session. Six, 25-year awards were won respectively by;

E. A. Graber, assistant chief, Bureau of Local Services, State Health Department

Helen Haughton, R.N., education director, Franklin County Unit, American Cancer Society, now retired

Martha L. Lauman, R.N., public health nurse, Summit County Health Department

Ethel M. Leazenbee, R.N., associate professor, School of Nursing, Ohio State University

Lucy Lynn, R.N., public health nurse, Scioto County Health Department

Mildred V. McIntyre, R.N., director of nurses, Cleveland Health Department

In addition, 10-year service awards were presented to 118 Ohio public health workers. Not all of the award winners were able to attend the meeting.

Earle E. Long, M.S., director of laboratories, Akron Health Department, handed over the presidential gavel to Thomas A. Gardner, M.D., chief, Bureau of Local Health Services, State Health Department. Other new officers are:

President-Elect—Catherine E. Ludlow, R.N., director of nurses, Cincinnati Health Department

Vice-President—Robert C. Adams, D.V.M., principal public health veterinarian, Columbus Health Department

Secretary-Treasurer—June O'Donnell, Statistical and Records Section, State Health Department

Representative to the APHA Governing Council—A. L. Fishback, sanitary engineer, Northeast District Office, Department of Health

Roger D. Bonham, information writer in the State Health Department is the new editor of OPHA's quarterly "Newsgram."

Montana Association Meets

The 41st annual meeting of the Montana Public Health Association was held in Bozeman on May 7 and 8. Topics selected for discussion covered a broad range of public health problems in Montana, including "Q" fever, stream pollution, and alcholism.

Robert A. Dyar, M.D., M.P.H., of San Francisco, president of the Western Branch, APHA, was the out-of-state speaker at the Bozeman meeting. He discussed the organization, aims, and services of the joint regional office of the APHA and the Western Branch. Two committees of this branch have Montana representation. They are: Legislation, Mary E. Soules, M.D., M.P.H., of Helena; Training, K. Elizabeth Anderson of Helena.

Paul R. Ensign, M.D., M.P.H., health officer of the Cascade City-County Health Department, was elected president of the state association succeeding Carl Hammer, M.D., M.P.H., health officer for the Gallatin City-County Health Department. Other officers elected were:

Vice-President—Anna Dittmer, Lewistown, Fergus County public health nurse

Secretary—Tom Willett, Hardin, sanitarian, Public Health District I

Albert Dube, Miles City, sanitarian, continues his two-year term as treasurer.

Active Southern Branch Meeting

The three-day, 27th annual meeting of the Southern Branch in Miami, Fla., May 27-29, was a full one. Three mornings for general sessions, three afternoons of meetings of each of nine sections were on the docket with only the Biology and Laboratory Sections sharing their programs. In addition three sections—Health Education, Nutrition, and Public Health Nursing—held business meetings before the last morning's general session. There was also a preconvention evening president's reception and a two-day public health nurses' field teaching conference.

At the opening general session the retiring president, Guy V. Rice, M.D., director of health conservation services,

Florida State Health Department, delivered his farewell address. The final general session was devoted to section and committee reports and other business. Among the suggestions discussed was a Standing Committee on Exhibits, its members to serve under the Executive Committee.

The meat of the program, "People in a Changing Environment," was led by John D. Porterfield, M.D., Deputy Surgeon General, and Chairman of the APHA's Executive Board. The numerous reactions to his "opener" had been stimulated by the Program Committee, which prepared for participants a number of discussion questions. These and the "official" reactors—engineer, anthropologist, sociologist, educator, and psychologist—stimulated talk and thought about many things: the anxieties of the present age, the coordination of environmental health services, health education and what the social scientists can offer, community mental health services, and the health worker and subcultures.

New officers of the branch are:

President—Betty Ficquett, R.N., M.P.H., consultant nurse, South Carolina State Department of Health.

Vice-President—Myrton L. McDonald, director, Dallas Health Museum; T. Elmo Cato, M.D., Dade County (Fla.) health officer; Jana M. Jones, Ark.

Secretary-Treasurer—Guy M. Tate, Jr., M.S., director of sanitation, Jefferson County (Ala.) Health Department

Representative to APHA Governing Council —Guy V. Rice, M.D.

Michigan—A Theme in Three Parts

"A public Health Panorama—Problems, Programs, People" was the theme of the 38th annual conference of the Michigan Public Health Association at the Pantlind Hotel in Grand Rapids, May 13-15. Consideration of this theme was opened with "Surveying the Nation's Health," an address of Forrest L. Linder, Ph.D., director of the National Health Survey, PHS, and with "Michigan's Health Needs" by the Michigan health officer, Albert E. Heustis, M.D.

"Problems" aspects of the theme were explored at a round-table discussion of environmental health problems, chaired by Vinson R. Oviatt, Environmental Health Division, MPHA. They were also considered at a session on "Public Health Aspects of Food, Milk, and Meat," in which reports were heard from John Vogt, chairman, Commissioner's Sanitary Code Advisory Committee; and from Otto Engleke, M.D., chairman, MPHA Advisory Committee to Governor's Task Force Committee on Reorganization. At the conference dinner Carey P. McCord, M.D., Institute of Industrial Health, University of Michigan, dwelt further on "problems" in a talk on "Two Hundred New Diseases Every Year."

"Programs" were discussed by Senator Lloyd A. Stephens of Scottsville, and A. B. Price, M.D., regional medical director, PHS, Chicago, who spoke on health legislation at the state and federal levels, respectively. A symposium chaired by Hugh Robins, M.D., professor of public health practice, University of Michigan, on "The Newer Community Health Services" carried the discussion of programs further. Symposium participants dealt with nursing home care, hospital rehabilitation, home care, bedside nursing, tuberculin testing, and teen-age nutrition.

"People" in the public health panorama figured in a talk by Nancy Lurie, Ph.D., cultural anthropologist, University of Michigan. Her address was entitled, "How Do We Get People to Work With Us?" John R. Rodger, M.D., spoke on the "Public's View of Public Health." Edward Wellin, Ph.D., APHA's field director of study of behavioral sciences in public health, brought APHA greetings to the conference. He also discussed "Behavioral Sciences in Public Health Practice."

Attendance at the three general

sessions and the meetings of the nine sections was above average. Officers elected for 1959-1960 are:

President—Philip V. Shirley, sanitarian, Ingham County Health Department, Lansing

Vice-President—Otto Engleke, M.D., director, Washtenaw County Health Department, Ann Arbor

Secretary—Betty Van Dyke, Branch-Hillside Health Department, Coldwater

Treasurer—Lyman B. Chamberlain, Eaton County Health Department, Charlotte

Representative to the APHA Governing Council—Isabelle Ryer, R.N., director, Division of Nursing, City Health Department, Detroit

The MPHA conducted its final morning meeting jointly with the Michigan School Health Association in its 26th Annual Conference and with the regional conference of the American School Health Association. The annual program session of these groups was held that afternoon.

American Public Health Association membership blank on page XXXV

Two-Week Course in Air Pollution

New York University's Institute of Industrial Medicine and College of Engineering are offering a full-time course in air pollution, November 30-December 11, 1959. The curriculum is "designed for engineers, physicians, industrial hygienists, and others concerned with . . . means for reducing industrial emissions, determination of the severity of pollution, the associated health hazards and governmental regulations." Other subjects are micrometeorology, air cleaning equipment, power plants, and control in ferrous, nonferrous, petroleum, and chemical industries. The course will also deal with the public relations and economic aspects of air pollution. Students will visit the Brookhaven National Laboratory. Tuition is $100. Further information from the Office of the Associate Dean, New York University Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Medical Health Officer—for established rural county health department in central Illinois. Good personnel policies with vacation and retirement. Salary range $9,600-$12,000 for physician with public health training and experience. Contact W. T. Douglas, M.D., Hillsboro, Ill.

District Health Physician—State of Maine. Possession of a certificate of registration with the right to practice medicine and surgery in Maine as issued by the State Board of Registration of Medicine. $8,580-$10,608 a year; may be hired within the range depending on experience. Write Personnel Officer, Health and Welfare Department, State of Maine, Augusta, Me.

District Health Officers—for New York State Department of Health, various locations. Salary $9,104-$10,874, or $11,152-$13,162, depending on qualifications. Must have public health experience, M.P.H. degree preferable, and be eligible for New York State medical license. Position under civil service; liberal vacation and sick leave allowances; Social Security, retirement, and insurance benefits. Write Sylvester J. Bower, Director of Personnel, New York State Department of Health, 84 Holland Ave., Albany, N. Y.

Local Health Director—Charlotte and Mecklenburg County, N. C. Population 275,000; million-dollar budget; staff of 150; outstanding new headquarters ready for occupancy. Board certification required. Salary range $12,600-$16,380, with allowance for experience, plus travel. Reply to Dr. Howard P. Steiger, 207 Hawthorne Lane, Charlotte 4, N. C.

Health Officer—Yamhill County, 38 miles from Portland near coast and mountains. $14,000 to start. Must have M.P.H. degree and some public health experience, be eligible for license to practice medicine in Oregon. Under merit system and Social Security coverage. Write to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Physician—with experience in private general practice for full-time teaching position in medical school General Practice Department featuring family care and comprehensive medicine. Prefer some experience in preventive medicine and public health. Faculty rank. Apply to R. A. Davison, M.D., 62 South Dunlap, Memphis, Tenn.

Public Health Director—County of Madera, Calif. The director will supervise county-wide health services for a population of 40,000. The county's 2,148 square miles includes a portion of California's famous Yosemite High Sierra country and the rich central San Joaquin Valley agricultural area. Position offers professional growth and opportunity in health services, particularly in fields of environmental sanitation and disease control. Appointment will be made within salary range of $10,860-$13,200 per year. M.D. degree, graduate work in public health, and license to practice in California are required, plus at least two years' full-time responsible experience in public health work. Write Administrative Officer, Courthouse Annex, Madera, Calif., giving summary of qualifications.

Public Health Epidemiologist—Salary $13,885-$16,390 annually. Needed to fill current vacancy in Michigan in the control of tuberculosis and adult health and chronic diseases, such as cancer, heart disease, and diabetes. Must be able to obtain a license to practice medicine in Michigan, have a master's degree in public health, and one year of professional medical experience in public health. All Michigan civil service benefits, such as generous paid vacation, liberal sick leave allowance, fine state retirement plan, plus Social Security coverage, and many others. For further information contact Mr. Frank Krupiarz, Personnel Officer, Michigan Department of Health, Lansing 4, Mich.

—PENNSYLVANIA DEPARTMENT OF HEALTH—

Public Health Opportunities in Pennsylvania

REGIONAL MEDICAL DIRECTOR—$13,301-$16,978

Public Health Physician II—To develop and administer a comprehensive program of public health services in a region of several counties. Requirements: Five years of responsible experience in public health administration; eligibility for certification by the American Board of Preventive Medicine and Public Health; eligibility for licensure in Pennsylvania.

ASSISTANT REGIONAL MEDICAL DIRECTOR—$12,675-$15,387

Public Health Physician I (General)—To assist Regional Medical Director in administering a comprehensive program of public health services in a region of several counties. Requirements: Four years of professional training and experience in public health, including completion of the formal training requirements for certification by the appropriate medical specialty board; eligibility for licensure in Pennsylvania.

Industrial Hygiene

ASSISTANT CHIEF, OCCUPATIONAL HEALTH SECTION—$12,675-$15,387

Public Health Physician I (Occupational Health)—To coordinate and promote a state-wide program of occupational health. Requirements: Four years of professional training and experience in public health or occupational health, including completion of the formal training requirements for certification by the appropriate medical specialty board.

Division of Laboratories

ASSISTANT DIRECTOR—$8,580-$10,954

Public Health Laboratory Director I—Assists in administering a large public health laboratory. Requirements: Three years of professional experience in a medical or public health laboratory; and graduate work in biologic science, public health or medicine to the level of a doctor's degree.

Public Health Nursing

ASSISTANT DIRECTOR OF NURSING—$7,407-$9,454

Public Health Nurse IV (Education)—Assists in directing a program of public health nursing education on a state-wide basis for nursing personnel and health agencies. Requirements: Graduation from a four-year college or university with major course work in nursing, including or supplemented by completion of an approved program of study in public health nursing, supplemented by graduate study in public health nursing, public health nursing education or public health to the level of a master's degree; and four years of public health nursing experience in a generalized public health program.

All positions under the merit system; real opportunity for professional training and advancement; excellent retirement system; liberal sick leave, vacation and holiday benefits. Comparable education and training may be substituted for the stipulated requirements for these positions.

For further information or applications, please contact Dr. C. Earl Albrecht, Deputy Secretary of Health, P. O. Box No. 90, Harrisburg, Pa. Final date for filing applications is November 11, 1959, and examinations are scheduled for December 5, 1959.

Public Health Officer—Wanted for well established local health department. M.P.H. required. Salary $12,000, plus travel; retirement, vacation, and sick leave. Lee County Health Department, Dixon, Ill.

Assistant Public Health Director—for Arlington County, Va. Entrance salary $10,500 a year. United States citizenship and eligibility for a license to practice medicine in Virginia required. Training or experience in public health administration desirable. Age to 50. Apply Arlington County Personnel Department, Court House, Arlington, Va.

Medical Health Officer—with M.P.H. For established City Health Department, La Crosse, Wis. Salary comparable with other cities, depending on qualifications. Retirement benefits, sick leave, vacation. Write Paul Gatterdam, M.D., President, La Crosse Health Department, 1836 South Ave., La Crosse, Wis.

Public Health Laboratory Director—Salary $836-$1,120 per month. Requires three years of specialized experience in bacteriology or pathology, of which two years shall have been in responsible charge of a laboratory engaged in the study of control of human diseases, and graduation from a medical school of recognized standing with a degree of doctor of medicine with special training in public health bacteriology; or six years of experience in public health laboratory work, of which three years shall have been in responsible charge of a public health laboratory or of research in the bacteriological aspects of communicable diseases or public health bacteriology, and a doctorate degree in bacteriology or pathology; or any equivalent combination of experience and training. Write for further information and application to the Department of Civil Service, State of Hawaii, 825 Mililani St., Honolulu 13, Hawaii.

Public Health Nurses—Salary range $4,944-$6,024. Starting salary depends on qualifications. Good personnel policies, health insurance, Social Security, plus liberal retirement plan. California P.H.N. certificate required. Generalized program, including school nursing. Information and application forms available from Nursing Division, Kern County Health Department, Box 997, Bakersfield, Calif.

Sanitary Engineer—for state-wide public health program. Starting salary $7,344 and travel expenses. Retirement plan in effect. Requirements: bachelor's degree and six years' experience or master's degree and five years' experience, both including two years in sanitary field. For information and application write Merit System Director, Kentucky State Department of Health, 620 S. Third St., Louisville 2, Ky.

Supervisor, Records Collection and Processing—for the Vital Statistics Section, North Carolina State Health Department in Raleigh. Salary range $5,436-$6,612. Requires three years' paid employment in statistics, records collection and processing, college graduate with three hours in statistics. Write Mrs. Isabelle Henderson, Personnel Officer, State Board of Health, Raleigh, N. C.

Director, Local Health Services—Wisconsin. Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $1,012-$1,247, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Director, Bureau of Maternal and Child Health—Plans and directs a state-wide program for the conservation and improvement of maternal and child health; coordinates and supervises the activities of the bureau. Major activities include the child guidance, school health, and nutrition programs. Desirable qualifications and experience: M.P.H., one year of experience in private practice, five years of experience in public health work, three years of which shall have been in an administrative capacity; pediatric training desirable. Eligibility for license to practice medicine in Wisconsin required. Salary starts at $1,122 per month with annual merit increases of $40 to $1,297. Civil service, vacation, sick leave, Social Security, retirement benefits. Group life, hospital, and sickness insurance costs shared by the state. Write E. H. Jorris, M.D., Assistant State Health Officer, 1 W. Wilson St., Madison 2, Wis.

Public Health Nurses—for rural and metropolitan areas. Starting salaries $4,056-$5,076, depending on area. Need B.S. in public health nursing or collegiate basic course, or one year academic training in public health. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Public Health Nurse—$4,944-$6,024; four annual increases, Social Security, and state retirement, 15 working days' vacation, 12 paid holidays. Progressive health department in coastal resort area 70 miles south of San Francisco. Dr. Russell Ferguson, Santa Cruz Health Department, 1060 Emeline St., Santa Cruz, Calif.

Executive Director—combined public health nursing agency. Education and experience in public health nursing, including supervisory experience. Have well qualified health officer. Salary open. Five-day, 40-hour week, month's vacation, and liberal personnel policies. Capital city, population 216,000. Public Health Nursing Association, Des Moines, Iowa. Write Mrs. J. R. McNerney, Personnel Committee, 521 16th St., West Des Moines, Iowa.

Assistant Supervisor, Nursing Services—for Missouri State Crippled Children's Serv-

ice. Salary $5,400-$6,900. Write Merit System Supervisor, MSCCS, Student Health Center, University of Missouri, Columbia, Mo.

Public Health Nurses—for generalized public health nursing in New Mexico Department of Public Health. Salaries $335-$455. Opportunities for advancement, retirement plan, and other fringe benefits. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Director, Public Health Nursing—in New Mexico Department of Public Health in Santa Fe. Salary range $570-$780. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Public Health Nurses—Erie County Health Department offers opportunities for generalized public health nursing experience in a progressive, expanding program. Starting salary $4,300, with four annual increments to $5,520. Applicants must qualify as registered nurses in New York State or be eligible for licensure. Public health nursing preparation necessary. Apply Mrs. Mary E. Jones, Director of Nursing, Erie County Health Department, Room 427, City Hall, Buffalo 2, N. Y.

Public Health Nursing Supervisor—for a staff of seven health department nurses and three instructive visiting nurses for Charlottesville and Albermarle County, Va. Beginning salary $400 per month. Pleasant working conditions and excellent community. Write S. D. Sturkie, M.D., P. O. Box 159, Charlottesville, Va.

Public Health Nursing Positions—in combination agency. Historic and cultural center. Generalized service. Progressive program. Good personnel policies. Transportation furnished. Salaries dependent on qualifications. Opportunities for promotion. Apply to Marie L. Lowe, Director of Nursing, Instructive Visiting Nurse Association-City of Richmond, Department of Health, 223 S. Cherry St., Richmond, Va.

Public Health Nurse—Immediate position in health department. Merced County is situated in the growing San Joaquin Valley, near mountain resorts and 2½-hour drive to San Francisco. Five-day week, paid sick leave, vacation, county paid medical and health insurance, moderately priced housing available, county cars furnished, retirement and Social Security. Salary $4,512-$5,496. Write to A. Frank Brewer, M.D., Merced County Health Department, P. O. Box 1350, Merced, Calif.

Public Health Nursing Consultant (Assistant to Director of Public Health Nursing in State Health Department)—Give consultation to public health personnel in all phases of public health nursing, including in-service education; prepare manuals, guides, etc., for public health nurses; assist in administration of program. Bachelor's degree in public health nursing minimum preparation, master's degree desirable; four years' experience in public health nursing, including two in administration or supervision. Salary: start at $6,744; maximum $8,064. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write Miss Ione M. Rowley, R.N., Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Public Health Nurse III (District Advisory Nurse)—Give guidance and counseling to all public health nurses in a multiple-county area regarding community organization and relationships, program planning, public health nursing technics, records and reporting. Responsible for inservice education program for local public health nurses and evaluation of nursing services. Salary range $5,664-$6,744, plus travel allowance. B.S. degree with major in public health nursing; and three years' generalized experience as a public health nurse. Special requirement: registration or eligibility therefor as a registered nurse in Wisconsin; certification or eligibility for certification as a public health nurse in Wisconsin. Write R. J. Siesen, Personnel Officer, State Board of Health, Madison 2, Wis.

Industrial Hygienist—to develop, organize, and promote a local program of industrial hygiene and radiological health. A master's degree in industrial hygiene or equivalent preferred, but applications from other well qualified individuals welcomed. $6,000-$7,200, annual vacation, sick leave, retirement system, and merit system. Contact Larry J. Gordon, Director, Albuquerque Health Department, P. O. Box 1293, Albuquerque, N. M.

Sanitarians—Fine positions open in sunny California. Three weeks' vacation and county paid medical insurance. Start at $395 if eligible for California registration, and $417 if registered; progress to $595. No written examination. Write for information to Orange County Personnel Department, 801-C North Broadway, Santa Ana, Calif.

Professional Sanitarians—Two vacancies, State of Wyoming. Salary range $408-$580; $10 per diem, eight cents per mile. Food and general sanitation; five counties each. B.S. or M.P.H. and minimum of two years' experience. Contact A. E. Williamson, Director, Sanitation, State Department of Public Health, Cheyenne, Wyo.

Sanitary or Public Health Engineer—State of Wyoming staff position. Salary range $408-$696. B.S. in engineering or master's. Contact A. E. Williamson, Director, Sanitation, State Department of Public Health, Cheyenne, Wyo.

Public Health Engineer II—Qualifications: master's degree with at least two years' experience in a state or local health department. Duties: direction of activities of the Sanitation Division, one of three major divi-

sions of the Bureau of Environmental Sanitation, supervision of 36 employees. Civil service position. Vacation, sick leave, medical and hospital insurance, and liberal pension plan. Salary range $7,518-$8,147. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 200 E. Wells St., Milwaukee 2, Wis.

Consultant Psychologist—Male or female: Ph.D., and five years' experience required. Salary range $8,100-$9,600, can start up to $8,700; opportunity for additional $1,000 through extension teaching; possibility of appointment with less experience at lower salary; to serve as community mental health consultant in district health department; excellent opportunity for a resourceful, socially-oriented person with strong clinical background and current interest in preventive, community consultation work; development of local mental health programs, case consultation, information and education; fine climatic, cultural, and recreational attractions. Immediate. Write to Dr. Lester Libo, Director, Division of Mental Health, Department of Public Health, Santa Fe, N. M.

Clinical Psychologist—Male or female; Ph.D. and three years' clinical experience, including one administrative or supervisory, in child development clinic for mentally retarded preschool children; salary range $535-$745; fringe benefits. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Chapter Executives, Field Workers—Leading national voluntary health agency has openings in many categories in various parts of the country. We are seeking candidates with administrative or group work skills. Experience in working with boards, committees, and volunteers particularly desirable. Positions and salaries commensurate with background and prevailing local conditions. If you are interested in long-range career planning, please send complete résumé to **Box C-31**, Employment Service, APHA.

Public Health Educator III—Initiate and develop school-community health education programs in a multicounty district. Desirable qualifications: M.P.H. degree plus two years' experience in health education; sound working knowledge of principles of education and methods of teaching. Salary $502-$597 per month. Travel allowance, vacation, sick leave, retirement, group insurance plans. Write Dr. Amy L. Hunter, Director, Bureau of Maternal and Child Health, Wisconsin State Board of Health, Madison 2, Wis.

Nutritionist—to organize and execute nutrition program for Milwaukee City Health Department. Qualifications: master's degree in nutrition and three years' experience in a public or voluntary health agency. Salary range $5,376-$6,151. Civil service appointment, 40-hour week, pension, liberal vacation and sick leave policies. Dr. E. R. Krumbiegel, 200 E. Wells St., Milwaukee 2, Wis.

Public Health Nursing Consultants (Maternal and Child Health), (Orthopedic), (Tuberculosis), (Communicable Disease)—$6,716-$8,580. To render consultative services to public health nursing personnel in the field of specialization. Requirements: Graduation from a four-year college or university with major course work in nursing, including or supplemented by completion of an approved program of study in public health nursing, completion of a course in teaching methods and completion of an advanced program of study in the particular field of specialization; three years of public health nursing in generalized public health nursing or nursing in special field; and possession of or eligibility for a current certificate as a registered nurse as issued by the Pennsylvania State Board of Nurse Examiners.

Medical Social Worker III—$5,529-$7,055. To provide consultative medical social work services to professional staffs of health agencies. Requirements: Graduation from a four-year college or university supplemented by the attainment of a master's degree from an approved school of social work; and four years of experience in social work.

Physical Therapist I—$4,121-$5,268. To administer treatment to patients in all phases of therapeutic exercises. Requirements: Graduation from a four-year college or university with major course work in physical therapy; and possession of or eligibility for a license to practice physical therapy as issued by the Pennsylvania Board of Medical Education and Licensure.

Physical Therapist II—$5,007-$6,390. To supervise and administer a variety of treatments to patients. Requirements: Graduation from a four-year college or university with major course work in physical therapy; two years of experience as a professional physical therapist; possession of or eligibility for a license to practice physical therapy as issued by the Pennsylvania Board of Medical Education and Licensure.

All positions under the merit system; real opportunity for professional training and advancement; excellent retirement system; liberal sick leave, vacation, and holiday benefits. Comparable education and training may be substituted for the stipulated requirements for these positions. For further information or applications, please contact Dr. C. Earl Albrecht, Deputy Secretary of Health, P. O. Box No. 90, Harrisburg, Pa. Final date for filing applications is November 11, 1959, and examinations are scheduled for December 5, 1959.

Chief Public Health Chemist—for the Colorado State Department of Public Health, Denver, Colo. Position under merit system. Salary $528-$620. Bachelor's degree with major in chemistry and at least three years' experi-

ence in a public health laboratory is required. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Director of Public Health Department—City of Decatur, Ill. Qualified, full-time health officer. Licensed to practice medicine in Illinois. Starting salary $12,840 per year. Write for application and information to City Manager, c/o County Bldg., Decatur, Ill.

Public Health Nurse Supervisor (Crippled Children's Program)—A state health department program located in a medical center in Atlanta. Bachelor's degree in nursing, including public health or R.N. and a year of public health nurse training. Two years of experience in public health nursing. Entrance salary $4,128, with advances to $6,060. Write Director, Division of Personnel, Georgia Department of Public Health, State Office Bldg., Atlanta 3, Ga.

Research Associate—Health and Welfare Association of Allegheny County. Position involves research of practical nature that is closely tied in with planning functions of the association. Education: Master's degree in social work, sociology, public health, or related discipline, with specialization in research. Experience: Five years or more of experience in social research, preferably including some experience in a position which provides acquaintance with health and welfare services. Salary $7,000-$9,000, depending on qualifications. Send current statement of education and experience to Elmer J. Tropman, Executive Director, Health and Welfare Association, 200 Ross St., Pittsburgh 19, Pa.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Medical Director or Associate Director—for large company. M.D.; age 42; certified by the American Board of Internal Medicine and Subspecialty Board of Gastroenterology. Training and experience include a six-month fellowship in x-ray, a four-year fellowship in internal medicine at the Mayo Clinic, clinical investigation, full-time teaching at leading medical school, and private practice. Desire position with future for company with good occupational medicine program or desire for such. **Box PH-92,** Employment Service, APHA.

Health Officer—M.T.; licensed health officer in the state of New Jersey. Thirteen years in public health. Seven years as administrative officer in charge of progressive health department. Wide range of experience in health administration. Desire position with city, county, or state health unit or agency. Prefer northeastern United States. **Box C-49,** Employment Service, APHA.

Public Health Administrator—Returning from ICA Far East assignment in summer of 1960. Desire teaching or administrative position in private foundation or school of medicine, either in the United States or abroad. Especially interested in presenting public health courses to foreign students in the United States. Aged 48, male, no family ties, free to travel. Degrees in medicine and public health. Fluent French and good knowledge of Spanish. **Box PH-94,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Public health physician; assume direction of city department of public health upon January retirement of present incumbent; Atlantic Coast shipping, resort center, 300,000. (b) Medical health officer; new county headquarters; million dollar budget; 150 employees; $16,000, plus travel; South. (c) Assistant director of public health; college town, California; $11,000. (d) Chief health officer; progressive city of 70,000; ideal fishing, hunting, near lakes; N.W. (e) Executive public health nurse; coordinate VNA and city health department in merger; $15,000-$18,000. (f) Executive director; administrate large city agency for chronically ill; excellent opportunity; N.W. (g) Student nurse health supervisor; 150 students; 600-bed hospital near Chicago, $6,000.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

REFUSE COLLECTION PRACTICE—By the Committee on Refuse Collection, American Public Works Association (2nd ed.). Chicago, Ill.: Public Administration Service (1313 East 60th St.), 1958. 562 pp. Price, $8.00.

The handling and disposal of community refuse is the field of public sanitation that has been most bothersome to public officials. Until recent years it has had but little over-all technical study and at present remains in most instances in an unsatisfactory state. Only within the last ten to fifteen years have state and local health authorities given this essentially sanitary problem the attention its health aspects deserve. All too frequently the entire matter would be left to the separate departments of public works or street cleaning, or at times with private contractors to struggle with as best they can.

This volume, which is a thoroughgoing revision of a 1941 manual, was prepared by a committee of the American Public Works Association assisted by the U. S. Public Health Service. It deals exclusively with the collection phase of the refuse handling problem. It contains comprehensive information on collection practices, cost data, equipment employed, and even includes typical ordinances. It is well illustrated and indexed.

Viewed from the standpoint of a public health official, the volume would have been of increased value to all concerned with the problem if the sanitary features had been given more attention. Scarcely any mention is made of marked sanitary advances of recent years, such as the use of household garbage grinders, the elimination of back yard incinerators, the cooking requirements for garbage fed to animals, and the availability of remarkably effective insecticides and rodenticides. Scant or inadequate treatment is given to recent developments in the strictly collection phases, such as the improved mechanical cleaning of cans and trucks, the use of large portable containers which are filled at the point of production of the refuse and taken directly to the point of disposal. The exchange of empty clean receptacles for those filled with garbage though referred to as possibly "the ultimate in collection service" is promptly dismissed with the comment as being too costly. There is clearly need for a raising of the sights of those studying the practice of refuse handling, so that basic advances in the general orderliness and sanitary aspects of this community waste problem can be envisaged for the near future for our society of abundance.

The book is the most valuable manual of American practice in refuse collection and should be familiar to public officials, designers, and any involved in the refuse handling problem. A future edition of this work would benefit from some consideration of foreign practice in this field.

SOL PINCUS

ATOMIC MEDICINE (3rd ed.)—Edited by Charles F. Behrens. Baltimore, Md.: Williams and Wilkins (Mt. Royal and Guilford Aves.), 1959. 705 pp. Price, $15.00.

The third edition of "Atomic Medicine" is a text which should be in the hands of all those concerned with public health and medical research in the broadest sense.

The chapters on the atom family, nuclear reactors and bombs, and radiation detection and measurement provide in a singularly clear and comprehensive fashion the important background required by all concerned with these topics. As a natural sequel, there is the consideration of the effects of nuclear weapons

supplies knowledge and of what has happened in actual practice, as well as can be done with maintenance of essential national security. It brings before one, in a most impressive and depressing fashion, data which justify the widely expressed concern over the possible future use of atomic military materiel.

The discussion of the biology of radiation, the pathology induced by it, including the effects on hematopoiesis, covers most adequately both the morphological and functional aspects of the subject. Of particular interest is the consideration of recovery phenomena and of delayed effects as they pertain to the highly important matter of the hazard from fallout. It is gratifying to observe the precision and detail with which the existing clinical experience has been summarized. Unfortunately, the most recent studies with autologous, isologous, and homologous bone marrow were not available to the authors when the text was prepared. Although providing greater detail, however, this background adds little in principle to the text.

The material on the diagnosis and treatment of acute radiation injury, including that resulting from internally deposited isotopes, should be perused by all who may be concerned with accidents or military use of atomic weapons. This is equally true of the treatise on protection and permissible dosage factors, since the information provided is essential to all, from specialist to practitioner, who may be asked to express an informed point of view on these subjects. They are of great interest to the general population. Even the problem of the use of x-rays in dentistry is thoroughly presented.

Four chapters deal with the use of radioisotopes in general and in detail. They provide an excellent general review with a bibliography adequate enough to give a full background to those who may wish to enter the field or who wish convenient reference.

The book, perhaps, should end with the somber note of the discussion of survival methods in atomic disaster. Though brief, this chapter might be considered as an item of required reading for those who wish to be responsible citizens in exerting an influence on public policy.

Taken as a whole, or in detail, the material at hand in this book is of the utmost interest and most carefully prepared and exceedingly readable. It provides a mine of useful information and is a guide to deeper exploration of the field.

C. P. RHOADS

REHABILITATION CENTER PLANNING, AN ARCHITECTURAL GUIDE—By F. Cuthbert Salmon and Christine F. Salmon. University Park, Pa.: The Pennsylvania State University Press, 1959. 164 pp. Price, $12.50.

This book should provide an invaluable guide for all concerned with housing, treating, and training the handicapped. It is especially written for architects and sponsors of rehabilitation centers contemplating new construction or revision of existing facilities. Its publication is the result of a project sponsored by the Pennsylvania State University, the Conference of Rehabilitation Centers, and the American Institute of Architects. It was made possible by a grant from the Office of Vocational Rehabilitation, U. S. Department of Health, Education, and Welfare.

The guide contains more than 200 drawings, together with a brief discussion of the kind of activities found in component parts of a center. Flow charts have been used to show the interrelationship of the different areas of activities. Accompanying the guide is a 32-page supplement with a selection of plans and programs of rehabilitation centers in the United States and Canada.

The basic principles outlined in the section on "Rehabilitation and the Community" and in "Rehabilitation Center Programming" should be compulsory reading for every individual in the re-

habilitation field. It becomes apparent that sound planning requires thoroughness.

It is not expected that this architects' guide will have a very wide distribution, but in the special field for which it was written it should fill a very definite need. It should be made available to every health official, architect, and others planning not only rehabilitation centers but also such facilities as acute and chronic disease hospitals, nursing homes, and children's treatment and training centers.

ASA BARNES

PLANNING EVALUATION OF MENTAL HEALTH PROGRAMS—New York, N. Y.: Milbank Memorial Fund (40 Wall St.), 1958. 104 pp. Price, $1.00.

This monograph is the report of the second meeting of the Advisory Council on Mental Health Demonstrations. The participants were leading personalities in psychiatry and public health.

The report consists of two parts. The first part discusses methods for evaluation of programs of patients and the difficulties in this area. It also attempts to classify some psychiatric illnesses into the usual epidemiological classification of prevention and degrees of control and relates this to community mental health board activities. In the report of "The Application of Control Methods to Mental Illness," questions as to where and when some of the preventable mental illnesses can be attacked are discussed. The discussion following lists a number of difficulties in this area.

The second point consists of the model of the comprehensive program for the aged, to be carried out in Syracuse, N. Y. This includes the design, the service elements of the program, the design for evaluating the program, and follows with a discussion of the problems involved.

This monograph is recommended for those concerned with planning community programs, as it continually stresses method of evaluation as an integral part of the programs.

DAVID SANDERS

IMMUNITY AND VIRUS INFECTION—Edited by Victor A. Najjar. New York, N. Y.: Wiley (440 Fourth Ave.), 1959. 262 pp. Price, $10.50.

This volume, which is based on a symposium held at Vanderbilt University School of Medicine, brings together recent work in the related fields of immunology and virus infection. The section devoted to each of the two fields begins with a chapter by Sir Macfarlane Burnet in whose honor the symposium was held. As usual he has some very stimulating ideas which again demonstrate not only the breadth and depth of his knowledge, but also his ability to approach a problem with common sense.

This book should appeal to almost everyone in public health and medicine. The discussions of immunologic theory, of the properdin system, and of the separation and purification of antibodies will be of particular interest to immunologists and immunochemists. Other chapters will be attractive to allergists and oncologists especially. There is even a chapter on the genesis of fever which should appeal to physicians generally.

Throughout the discussion on immunity there is emphasis on the problems of autoantibody production and of the perennial question of why we do not normally produce antibodies to our own tissues. These discussions have renewed meaning because of the recent discovery that conditions such as Hashimoto's disease are due to tissue autoantibodies and also because of the current interest in tissue transplantation.

The section devoted to virus diseases is less comprehensive, but includes some excellent material on the physical and chemical nature of viruses and on the relation of bacteriophages to genetic changes in bacteria. The last three chap-

ters by Sabin; Paul, et al.; and Fox, respectively, are concerned with the effects of vaccination against poliomyelitis with active and inactivated virus vaccines. These chapters will be of particular interest to epidemiologists and health officials. HOWARD J. SHAUGHNESSY

SELECTED MATERIALS ON STAPHYLOCOCCAL DISEASE (No. 627). 237 pp. Price, $1.25.

SELECTED MATERIALS ON ENVIRONMENTAL ASPECTS OF STAPHYLOCOCCAL DISEASE (No. 646). 289 pp. Price, $1.50. Communicable Disease Center Training Program, PHS. Washington, D. C.: Gov. Ptg. Office, 1958 and 1959.

Recognizing that a basic approach to the solution of the problem of staphylococcal disease embraces adequate training of all personnel involved, the Communicable Disease Center of the U. S. Public Health Service has, as a part of its training program, published these two volumes of selected reprints and other training aids. In addition to 47 reprints, appendixes are included containing information on audiovisual training aids, additional readings, location of phage typing centers, recommendations of several professional associations, list of national, state, and local agencies concerned with the environmental control of hospital infections, and an outline of the hospital environment.

The Training Branch of the CDC has rendered the additional service of developing an index for the specific purpose of making the information readily obtainable for training and educational purposes.

The volumes represent an important contribution by bringing together the pertinent guide and reference material in the field, thus making it easily available to physicians, nurses, laboratory, and environmental health workers who may be called upon to deal effectively with the problem of staphylococcal disease. NICHOLAS D. DUFFETT

THE INDUSTRIAL ENVIRONMENT—ITS EVALUATION AND CONTROL. Public Health Service Publication No. 614—By the Occupational Health Field Headquarters, Public Health Service, Cincinnati, Ohio: Washington, D. C.: U. S. Gov. Ptg. Office, 1958. 354 pp. Price, $2.75.

This syllabus for short courses for industrial hygiene engineers and chemists constitutes the results of an evaluation of two weeks' training courses presented annually by the Occupational Health Program of the Public Health Service since 1953. A tremendous fund of information useful to the industrial hygienist is included in these pages. Its greatest value is to be derived through actually taking the course for which it is the syllabus, but the content is of a high order of value to the practicing industrial hygienist and to any educational agency presenting similar material either as a short course or as a group of full semester courses.

The scope of the syllabus is tremendous, covering methods of air sampling and analysis, industrial ventilation and other means of engineering control, the physical instruments such as the electron microscope, the emission spectrograph and the polarograph, calibration methods of a number of sampling devices, and measurement of noise and illumination. In regard to the latter, it is unfortunate that the date of publication just preceded that of the newly recommended illumination levels initially released in the August, 1958, issue of the Journal of the Illuminating Engineering Society. However, reference is made to the prospective listing of the new levels in the third edition of the IES Lighting Handbook in 1959.

The several sections of the syllabus are capably prepared by various members of the staff of the Occupational Health Field Headquarters and edited by Andrew D. Hosey, Robert G. Keenan, and Charles D. Yaffee of that group.

WARREN A. COOK

HEALTH EDUCATION IN THE ELEMENTARY SCHOOL—By Helen Norman Smith and Mary E. Wolverton. New York, N. Y.: Ronald Press (15 East 26th St.), 1959. 325 pp. Price, $4.50.

This book, dedicated to the memory of Helen Leslie Coops, is essentially a revision of an earlier publication by Miss Coops.* Emphasis is on practical suggestions for health teaching in the first six grades. The book is replete with excellent illustrations of classroom activities based on the experience of many teachers.

The organization of the content into chapters instead of larger divisions is a distinct improvement which should increase the usefulness of the book, especially as a text for prospective teachers. There also are some new chapters dealing particularly with planning. Limited attention is given to the historical background for school health education, school organization for health education, and personnel responsible. Emphasis is on the subject matter for health instruction, curriculum planning, and materials and methods for teaching. The closing chapters depict dramatically how various adults meet the everyday problems of healthful living thus emphasizing the importance of health education and clarifying its aims. A selected list of publications and sources for the teacher are contained in the appendix.

Little attention is given to the health needs of children as a basis for health teaching or to the evaluation of health teaching. The theoretical treatment of school health education and the historical background are somewhat superficial and sketchy, perhaps necessarily so, for a book of this size.

Nevertheless, this is a good practical reference, especially for the prospective and beginning teacher. It should be useful as a text for health education methods courses in colleges and universities and for public health workers serving as health education resource persons to elementary school personnel.

MABEL E. RUGEN

* Coops, Helen. Health Education in Elementary Schools. New York, N. Y.: Barnes, 1950.

UP FROM PUERTO RICO—By Elena Padilla. New York, N. Y.: Columbia University Press (2960 Broadway), 1958. 317 pp. Price, $5.00.

In the words of the author, "this book has been written for people interested in the quiet dramas of anonymous lives." Actually, it offers much more. Those involved in supplying health services to needy groups of Puerto Ricans will find this a valuable composite of Puerto Rican attitudes, backgrounds, and reactions in this new environment to which they have come.

Based upon a two- and a half-year field interview study, the book reviews life among the residents of a particular slum area composed of a few square blocks of a large city. The treatment is purely qualitative and descriptive, a method of presentation which makes for smooth reading but leaves the practicing health officer somewhat frustrated. It is not possible for him to know which of the many attitudes described are sufficiently widespread or intense to require major readjustments in health service programs. Nor will the health worker find well defined suggestions as to what he can do to discharge his mission more effectively.

Nevertheless, the chapters reveal an interesting picture of family and community events, together with their emotional and attitudinal impact—like the feelings of "Eastville" when a noted criminal of their ancestry was caught and killed there, a father's discipline of his unruly sons, a wife's reaction to the extramarital affairs of her husband, a mother's opinions about the local welfare and health departments. Granted that the first step in improving the lives of disadvantaged citizens is a full under-

standing of them, this portrayal goes a long way toward building such a bridge. It also evokes a sincere respect for these newest additions to the melting pot of our large cities and describes much which is admirable and which we earlier arrivals can well afford to learn from our new cousins. GEORGE JAMES

THE TROUBLED CHILD—By Helen Moak. New York, N. Y.: Holt (383 Madison Ave.), 1958. 175 pp. Price, $3.50.

The author, intensely interested in her subject, has a grasp of many psychological theories. She is objective about the effect of family tensions in a home broken by death, divorce, desertion. Also less tangible situations are sensitively evaluated. In the book the reader finds a sympathetic and understanding counselor, but of course no answers to an individual question.

The author's purpose in helping other parents of troubled children seems clear; moreover the value of the book to other persons, even including those who work with adults may be great if they will read earnestly Chapters seven, eight, nine, and ten. The full significance of these last chapters will not be appreciated, however, unless the earlier pages have been read.

The foreword by Melvin S. Heller, M.D., a child psychiatrist, adds a professional touch which enhances the value of the book.

Chapter two shows that parents have been blamed by psychologists for situations which are really beyond the parents' control. (No doubt this is so.) Fortunately Chapter nine includes: "Love and acceptance of oneself as well as of others is a basic theological teaching; it is also a principle of modern psychiatry."

Professional workers in mental health are praised in Chapters six and nine for their postive contributions. Additional community resources important to preventive psychiatry are mentioned and are used to illustrate ways for laying a sound foundation for mental health. This book has much to recommend it for persons who work with people.

MARTHA L. CLIFFORD

THE CENTRAL NERVOUS SYSTEM AND BEHAVIOR—Edited by Mary A. B. Brazier. The Josiah Macy, Jr. Foundation and the National Science Foundation. New York, N. Y.: Josiah Macy, Jr. Foundation Publications (16 West 46th St.). 450 pp. Price, $5.25.

This volume reports the first of a series of conferences devoted to familiarizing Western workers with Russian scientific contributions on the central nervous system and behavior. Nine major and several minor presentations plus discussion revolving around them are given. Topics include nineteenth century Russian neurophysiology, Pavlov, post-Pavlovian work in conditional reflexes, electroencephalographic studies of conditioned learning, and others. The conference and publication were sponsored jointly by the Josiah Macy, Jr. Foundation and the National Science Foundation.

MEDICINE AND ANTHROPOLOGY—Edited by Iago Galdston. New York Academy of Medicine. New York, N. Y.: International Universities Press (227 West 13th St.), 1959. 165 pp. Price, $3.00.

The six papers in this volume, originally presented as "Lectures to the Laity," are by Paul Fejos, John Dodds, Marston Bates, F. S. C. Northrop, Alexander Leighton, and Raymond Firth. They deal with the implications of magic for medicine, ecology of health, cultural mentalities and medicine, effects of acculturation on mental and physical health, and others. This is a readable and provocative book.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADMISSION REQUIREMENTS OF AMERICAN MEDICAL COLLEGES INCLUDING CANADA, 1959-1960. Compiled by H. H. Gee and E. S. Nourse. Evanston, Ill.: Association of American Medical Colleges, 1959. 237 pp. Price, $2.00.

ANNUAL SURVEY OF PSYCHOANALYSIS. VOL. 5. A COMPREHENSIVE SURVEY OF CURRENT PSYCHOANALYTIC THEORY AND PRACTICE. Edited by J. Frosch and N. Ross. New York, N. Y.: International Universities Press, 1959. 608 pp. Price, $12.00.

CANADIAN CANCER CONFERENCE. PROCEEDINGS OF THE THIRD CANADIAN CANCER RESEARCH CONFERENCE, HONEY HARBOR, ONTARIO, 1958. VOL. 3. Edited by R. W. Begg. New York, N. Y.: Academic Press, 1959. 461 pp. Price, $12.00.

CONNECTIVE TISSUE, THROMBOSIS AND ATHEROSCLEROSIS. PROCEEDINGS OF A CONFERENCE HELD AT PRINCETON, N. J., 1959. Edited by I. H. Page. New York, N. Y.: Academic Press, 1959. 316 pp. Price, $9.50.

COST OF MEDICAL CARE—STUDIES AND REPORTS. Washington, D. C.: International Labor Office, 1959. 216 pp. Price, $1.50.

COUNCILS IN MODERN PERSPECTIVE. Ottawa, Ont., Canada: Canadian Welfare Council, 1959. 64 pp. Price, $1.00.

CYTOPATHOLOGY OF VIRUS INFECTION. ANNALS OF THE NEW YORK ACADEMY OF SCIENCES. VOL. 81, ART. 1. R. Love, et al. New York, N. Y. The Academy, 1959. 214 pp. Price, $4.50.

CURRENT MEDICAL RESEARCH—A REPRINT OF THE ARTICLES IN THE REPORT OF THE MEDICAL RESEARCH COUNCIL, 1957-1958. London, England: Her Majesty's Stationery Office, 1959. 46 pp. Price, 3s.6d. Net.

EDUCATORS GUIDE TO FREE FILMSTRIPS, 1959 (11th ed.). Compiled and edited by M. F. Horkheimer and J. W. Diffor. Randolph, Wis.: Educators Progress Service, 1959. 191 pp. Price, $6.00.

ELEMENTARY TEACHERS GUIDE TO FREE CURRICULUM MATERIALS—16TH ANNUAL EDITION. Randolph, Wis.: Educators Progress Service, 1959. Price, $6.50.

FAMILY PLANNING, STERILITY AND POPULATION GROWTH. R. Freedman; P. K. Whelpton; and A. A. Campbell. New York, N. Y.: McGraw-Hill, 1959. 515 pp. Price, $9.50.

FRESH WATER BIOLOGY (2nd ed.). H. B. Ward and G. C. Whipple. New York, N. Y.: Wiley, 1959. 1248 pp. Price, $34.50.

GRADUATE EDUCATION FOR HOSPITAL ADMINISTRATION. Edited by R. E. Brown. Chicago, Ill.: University of Chicago, The Graduate Program in Hospital Administration, 1959. 190 pp. Price, $3.00.

GREAT DECISION, THE. SECRET HISTORY OF THE ATOMIC BOMB. M. Amrine. New York, N. Y.: Putnam, 1959. 251 pp. Price, $3.95.

HOSPITAL SURVEY OF DENMARK—A STATISTICAL ANALYSIS OF THE UTILIZATION OF MEDICAL-SURGICAL HOSPITALS IN 1952-1953 AND 1930. THE MORBIDITY SURVEY OF 1950. Copenhagen, Denmark: Ejnar Munksgaard, 1959. 201 pp.

HOSPITAL UTILIZATION UNDER INSURANCE. MONOGRAPH SERIES NO. 6. M. L. Roemer and M. Shain. Chicago, Ill.: American Hospital Association, 1959. 39 pp. Price, $1.75.

HOUGH, CLEVELAND, OHIO: A STUDY OF SOCIAL LIFE AND CHANGE. M. B. Sussman and C. White. Cleveland, Ohio: Western Reserve University, 1959. 95 pp. Price, $3.50.

HUMAN INTEGUMENT. Edited by S. Rothman. Washington, D. C.: American Association for the Advancement of Science, 1959. 260 pp. Price, $5.75; AAAS Members, $5.00.

MANUAL OF INDUSTRIAL RADIATION PROTECTION. PART II—MODEL CODE OF SAFETY REGULATIONS (IONIZING RADIATION). Washington, D. C.: International Labor Office, 1959. 54 pp. Price, $.75.

MANUAL OF ORAL EMBRYOLOGY AND MICROSCOPIC ANATOMY (2nd ed.) D. Permar. Philadelphia, Pa.: Lea and Febiger, 1959. 121 pp. Price, $5.50.

PHYSICOCHEMICAL MECHANISM OF NERVE ACTIVITY AND MUSCULAR CONTRACTION, SECOND CONFERENCE ON. Annals of the New York Academy of Sciences, Vol. 81, Art. 2. D. A. Nachmansohn, et al. New York, N. Y.: The Academy, 1959. pp. 215-510. Price, $4.00.

POWER OF SEXUAL SURRENDER, THE. M. N. Robinson. New York, N. Y.: Doubleday, 1959. 263 pp. Price, $4.50.

PRINCIPLES OF DISABILITY EVALUATION. W. C. Smith. Philadelphia, Pa.: Lippincott, 1959. 210 pp. Price, $7.00.

RADIOPAQUE DIAGNOSTIC AGENTS. ANNALS OF NEW YORK ACADEMY OF SCIENCES, VOL. 78, ART. 3. M. H. Poppel. New York, N. Y.: The Academy, 1959. pp. 705-1020. Price, $4.50.

RELEASED MENTAL PATIENTS ON TRANQUILIZING DRUGS AND THE PUBLIC HEALTH NURSE. I. Gelber. New York, N. Y.: New York University Press, 1959. 139 pp. Price, $3.00.

RESUSCITATION OF THE UNCONSCIOUS VICTIM —A MANUAL FOR RESCUE BREATHING. P. Safar and M. C. McMahon. Springfield, Ill.: Thomas, 1959. 79 pp. Price, $1.75.

SMOKING: THE CANCER CONTROVERSY. R. A. Fisher. Edinburgh, Scotland: Oliver and Boyd Ltd., 1959. 47 pp. Price, 2s. 6d.

A SYLLABUS AND ANNOTATED BIBLIOGRAPHY ON:
I. THE ECONOMICS OF AN AGING POPULATION. W. H. Franke and R. C. Wilcock. 57 pp.
II. THE PSYCHOLOGICAL ASPECTS OF AGING. R. G. Kuhlen and W. W. Morris, 30 pp.
III. THE SOCIOLOGY OF AGING AND THE AGED. I. L. Webber and G. F. Streib. 35 pp.
IV. SOCIAL WELFARE AND THE AGED. G. J. Aldrige and F. F. Fauri. 51 pp.
V. AN INTERDISCIPLINARY COURSE IN SOCIAL GERONTOLOGY. B. L. Neugarten; R. J. Havighurst; and C. F. Ryder. 31 pp.
Ann Arbor, Mich.: Institute for Social Gerontology, University of Michigan, 1959. Price, $.15 each or $.50 the set.

SYMPOSIUM ON INSTRUMENTATION IN ATMOSPHERIC ANALYSIS. Philadelphia, Pa.: American Society for Testing Materials, 1959. 57 pp. Price, $2.25; ASTM members, $1.80.

SYNOPSIS OF EAR, NOSE, AND THROAT DISEASES. R. E. Ryan; W. C. Thornell; and H. von Leden. St. Louis, Mo.: Mosby, 1959. 383 pp. Price, $6.75.

TECHNOLOGY OF FOOD PRESERVATION. N. W. Desrosier. Westport, Conn.: Avi Publishing, 1959. 425 pp. Price, $8.50; Foreign, $9.50.

TEXTBOOK OF ANATOMY AND PHYSIOLOGY (5th ed.). C. P. Anthony. St. Louis, Mo., 1959. 574 pp. Price, $5.35.

TROPHOBLAST AND ITS TUMORS. ANNALS OF THE NEW YORK ACADEMY OF SCIENCES. VOL. 80, ART. 1. William B. Ober, et al. New York, N. Y.: The Academy, 1959. 284 pp. Price, $8.50.

VIRUSES, THE. BIOCHEMICAL, BIOLOGICAL AND BIOPHYSICAL PROPERTIES. VOL. 2. F. M. Burnett and W. M. Stanley. New York, N. Y.: Academic Press, 1959. 408 pp. Price, $13.00.

WHAT NEXT, DOCTOR PECK? J. H. Peck. New York, N. Y.: Prentice-Hall, 1959. 209 pp. Price, $3.50.

Earlier Applications Necessary

The National Council to Combat Blindness announces that the date of application for its "Fight for Sight" research fellowships, grants-in-aid, and summer student fellowships has been advanced from March 1 to January 1, 1960. The Scientific Advisory Committee of the council will make the selection and notify successful candidates by mid-May in order that they may make arrangements with their respective institutions to begin work in early summer. During the nine years ending with 1958 the council has allocated nearly three-quarters of a million dollars for financing research in ophthalmology and related sciences, with the ultimate objective of reducing blinding eye diseases and ocular disorders.

Applications from Secretary, National Council to Combat Blindness, Inc., 41 West 57th St., New York 19, N. Y.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

Monumental Presentation—Almost any statistic you could wish for about hospital use by young and old, male and female, married and single, insured and uninsured, seems to have been thought of, then assembled and analyzed for your information and use.

BREWSTER, A. W., and KRAMER, L. M. Health Insurance and Hospital Use Related to Marital Status. Pub. Health Rep. 74, 8:721 (Aug.), 1959.

Five Thousand Children—Comprehensive health services—periodic examinations, immunizations, and parent counseling—are offered in 70 New York City day-care centers, each responsible for from 40 to 75 children three to six years old. A director, a physician, a counselor (from the Welfare Department), and nurse comprise the health team. Teachers entertain and manage the kids.

CHAPLIN, H., and JACOBZINER, H. A Health Program for Children in Day Care Service. Pub. Health Rep. 74, 7:567 (July), 1959.

Not to Be Bragged About—Here is your annual reminder, and still a forceful one, that public health's ordinary and conventional jobs are by no means completed and done with. "There is no convincing evidence," say the reporters, "that staphylococcal food poisoning and food-borne Salmonella infections are becoming less frequent." (The modest decline in numbers of such outbreaks over those of previous years is more likely due to failure in reporting them.) Other water- or food-borne diseases are not neglected.

DAUER, C. C., and DAVIDS, D. J. 1958 Summary of Disease Outbreaks. Pub. Health Rep. 74, 8:715 (Aug.), 1959.

Another Reminder—Among the nearly 200,000 deceased government life insurance policyholders the death rate (all causes) was 32 per cent greater among smokers than for nonsmokers. Cigarette smokers had highest rates, while the rates of cigar or pipe smokers weren't appreciably higher than nonsmokers. Greatest increase for regular cigarette smokers was in cancer of the lung (to about ten times that of nonsmokers), but there were increases, too, in certain other diseases, notably coronary heart disease.

DORN, H. F. Tobacco Consumption and Mortality from Cancer and Other Diseases. Pub. Health Rep. 74, 7:581 (July), 1959.

This May Be News—Despite our improved prophylactic measures and the virtual disappearance of the (USA) horse and mule population, there has been no decline in the incidence or mortality rate of tetanus during the last decade, it says here. The South Atlantic states enjoy the distinction of reporting the greatest number of cases. The preventive problem is usefully discussed.

DULL, H. B., and RAKICH, J. H. Tetanus Today. Nursing Outlook 7, 8:464 (Aug.), 1959.

Good Made Better—In Denmark, where tuberculosis incidence is low and still falling, the total eradication of the disease is the goal. There they maintain a central register, use BCG extensively in all age groups, selectively employ mass

radiography, enforce compulsory isolation, and have unified control agencies.

FRANKS, H. Tuberculosis Control in Denmark. Brit. M. J. 5142, 87 (July 25), 1959.

Potential Patients—This may seem a little less than something of vital immediacy to you, but the findings should furnish food for your professional rumination: tension disorders, it says here, are more prevalent in a rapidly growing suburban community and least prevalent in a stable rural area. Older people have more psychosomatic illnesses in the latter environment while younger adults have more in the former.

GORDON, R. E., and GORDON, K. K. Psychosomatic Problems in a Rapidly Growing Suburb. J.A.M.A. 170, 15:1757 (Aug. 8), 1959.

Town Affairs—In after-office hours some public health people become "townspeople." In this guise they take cognizance of all sorts of civic matters. As everyone knows the big share of the community dollar goes for schooling, so those of us who become after-hour human beings will find this series of five papers on school maintenance of deep interest even though school hygiene may have little to do with work-a-day affairs.

HARRISON, C. B. Planning Can Make Schools Easier and Cheaper to Clean (and four related papers). Modern San. 11, 7:11 (July), 1959.

Mumps Prophylaxis—"A primary course of two doses (of mumps virus vaccine) one to four weeks apart, followed 6-12 months later by a booster dose, gave most satisfactory results."

HENLE, W., et al. Studies on the Prevention of Mumps. J. Immunol. 83, 1:17 (July), 1959.

Metchnikoff Revisited—"It is astonishing to find how much was known about mechanisms of host resistance to bacteria in 1900" concludes the author of this fine discussion of certain areas of immunology, ". . . and in many regards, how little fundamental knowledge has been added in the 20th century."

HIRSCH, J. G. Immunity to Infectious Diseases: Review of Some Concepts of Metchnikoff. Bact. Rev. 23, 2:48 (June), 1959.

Long Wait—In 1832, one Chester Averill of Schenectady (N. Y.) published a pamphlet advocating chlorine disinfection of household water supplies. The idea was, naturally, vigorously condemned by the experts and royally ignored by the hoi-polloi. And so the filth diseases continued to take their toll unhindered until after the turn of the century.

KELLERT, E. Chester Averill and the Chlorination of Drinking Water. New York State J. Med. 59, 15:2947 (Aug. 1), 1959.

Safe Hospitals—Most of the current issue of this always practical periodical in the field of environmental engineering is given over to answering the question: do hospitals need sanitarians? As you would anticipate the answer is yes. The papers are worth your reading even though you've guessed the answer.

KLARMANN, E. G. Environment Hospital Sepsis—Some Aspects of Its Incidence and Control (and four related papers). Modern San. 11, 8:15 (Aug.), 1959.

"Social Diet"—Success is reported in inducing overweights to lose excess baggage. Mr. Fat and Forty eats his customary diet (with a few named exceptions), but his portions of everything are reduced by a quarter. In a hundred instances this resulted in a daily calorie reduction of about 400. This desirable result could be achieved without his companions knowing he was "on a diet." Appetite suppressors were sometimes used until the new eating habits had become well established.

PLOTZ, M. Modern Management of Obesity —The "Social Diet." J.A.M.A. 170, 13:1513 (July 25), 1959.

Federal Health—You know, in general, what the Public Health Service does in your own professional area, but do you know the whole story? This is a

brief, but seemingly a very inclusive picture of what the entire HEW department is attempting throughout the entire field of health.

RICHARDSON, E. L. Federal Role in the Nations Health. Pub. Health Rep. 74, 8:661 (Aug.), 1959.

Three Years Later—A thoroughgoing follow-up of 650 (British) children after their immunization against whooping cough—some with combined vaccine, others without combination with diphtheria and tetanus—brought to light 22 cases of pertussis plus 11 more doubtful cases. There was no difference traceable to the kind of vaccine. Two recommendations stem from the study: a booster dose at 15-18 months and the beginning dose at two months or younger.

SPILLER, V., and HOLT, L. B. Whooping Cough Immunization. Brit. M. J. 5145, 174 (Aug. 15), 1959.

Effective Substitute—Instead of a routine chest x-ray, a tuberculin test was given all inpatients of a woman's (surgical) hospital. About a third gave positive reactions. Of the positives later x-rayed more than half were negative; 37 per cent had evidence of inactive tuberculosis; and 2 per cent had active TB. Under the conditions set forth, the test proved a successful screening device.

TAUBENHAUS, L. J. The Tuberculin Reaction in Female Hospital Patients. New England J. Med. 261, 7:328 (Aug. 13), 1959.

Old Wives Tales—This conference on congenital malformations will need no introduction to the MCH'ers in our midst. How much of practical value for others there will be in the record would be difficult to assess. But all will be entertained, and a great deal will be added to their store of miscellaneous information by the review in the opening paper of the ancient theories about the causes of birth defects and curious and often inhuman social customs that arose from the acceptance of these theories.

WARKANY, J. Congenital Malformations in the Past. J. Chronic Dis. 16, 2:84 (Aug.), 1959.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Bact. Rev. (Bacteriological Reviews), Williams and Wilkins, Mt. Royal and Guilford Aves., Baltimore 2, Md.

Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C.1, England.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.

J. Chronic Dis. (Journal of Chronic Diseases), Mosby, 3207 Washington Blvd., St. Louis 3, Mo.

J. Immunol. (Journal of Immunology), Williams and Wilkins, Mt. Royal and Guilford Aves., Baltimore 2, Md.

Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

Nursing Outlook, American Journal of Nursing Company, 10 Columbus Circle, New York 19, N. Y.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

A Health Careers Newsletter Born

"Health Careers Exchange" made its debut in June, 1959. This newsletter is the "happy realization of long-standing hopes and plans." As an exchange of information among health career activities in the country it is hoped that the "every-few-months" newsletter will "inform, stimulate, and challenge." Information on health career activities is requested to "keep coming."

The first issue, a four-pager, condenses a lot of relevant information into a small compass. The contents may be quoted without permission and it is available to those involved in health career activities without charge. Zilpha C. Franklin, health careers administrator, National Health Council, is editor; 1790 Broadway, New York 19, N. Y.

Guideposts in a Report

What distinguishes "Cancer in California" is its simple, explanatory text for each chart and table. The explanations make the material understandable by the uninitiated as well as the initiated. For example, "The death rate for cancer is the number of cancer deaths divided by the total population, usually expressed in terms of 100,000 persons per year. . . . The death rate is also a measure of the chance of dying from a certain disease in a given year. Thus, the chance of a person's dying from cancer in 1956 was 142.5 in 100,000 or about 1 in 700."

How age affects the death rate or how control of other diseases increases the relative importance of cancer, why it is difficult to know just how many persons have cancer, and how the state's tumor registry has lessened this difficulty are among the many explanations in nontechnical language found in the report.

Lester Breslow, M.D., is chief of the Bureau of Chronic Diseases, in the Division of Preventive Medical Services. Director of the State Department of Public Health is president-elect of the American Public Health Association, Malcolm H. Merrill, M.D.

Progressive Patient Care

"Elements of Progressive Patient Care," a 90-page pamphlet, has been prepared by the Division of Hospital and Medical Facilities of the Public Health Service. "Progressive patient care" is described as "one concept of improvement which shows promise and which has aroused widespread interest." The five elements in this concept are intensive care, immediate care, self-care, long-time care, and home care, the first four of which are contained within the general hospital. The volume expresses the conviction that the hospital is "as much concerned with extending good medical and hospital care to the home by assisting the physician in the care of the patient at home, as with assisting him with the care of the patient in the hospital."

The report is the result of an investigation assigned to a team in 1956 into "the possibilities of a program based on the principle that the specific care a patient needs should determine the kind of unit in which he will be given care." The report indicates the many unanswered questions that still remain. It suggests that "Progressive Patient Care" is not a final blueprint but an attempt to provide tentative answers until there are

results of more comprehensive studies. Public health administrators dealing with the community organization for patient care should be familiar with these "tentative answers."

Jack C. Haldeman, M.D., is chief of the division. The volume is available, apparently without charge, from the Division or the Government Printing Office, Washington 25, D. C.

Another County with a Long History

The Wilmington (N. C.) News of June 11, 1959, headlines "Health Board, Nation's Oldest, Marks 80 Years." The story tells of the organization of the New Hanover County Board of Health on June 14, 1879. The date is documented in minutes of the meeting of the County Board of Commissioners, June 7, 1879, which mention the organization of the department. These minutes granted the first county superintendent of health, J. C. Walker, M.D., a $50 monthly allowance "for the performance of the duties required under the act, including attendance on the outdoor poor." His duties included supervision of the county home, jail, house of correction, and pest house. "Little was done," says the story, "toward prevention of diseases and preservation of good health. . . . Even vaccination as a preventive measure was unheard of in those days of beginning health work."

There follows a brief chronological history of the development of the events that grew into the present-day health program in the city and county board of health. Among these are a resolution in 1881 urging the legislature to establish a state board of health, a consolidated (city-county) board of health in 1913, a new building in 1943, 30,000 smallpox vaccinations in six months of 1910-1911 with not a single case by 1943, a 1910 ordinance for fly-screening of food in stores and urging a city sewage system, in 1904 the first ordinance for testing milk for bacteria and compulsory tuberculosis testing of cows. Thus, there is added another claimant to first—Jefferson County, Ky., Robeson County, N. C., and Yakima County, Wash., being others that have variously been credited with the honor.

This historical bit should be grist to the mill of the Southern Branch (APHA) project for developing a history of public health, a project now in process of expansion with wider sponsorship.

Water Quality Data

The Surgeon General of the Public Health Service has been given the responsibility of "cooperation with other federal, state, and local agencies having related responsibilities to collect and disseminate basic data on chemical, physical, and biological water quality insofar as such data or other information related to water pollution and the prevention and control thereof." At 51 sampling stations in different parts of the United States information on water quality is collected. The results of the first year's sampling are reported in "National Water Quality Network—Annual Compilation of Data" and cover the period of October 1, 1957-September 30, 1958. Information is available on radioactivity content of plankton and coliform organisms, organic chemicals, and various chemical constituents. Government Printing Office, Washington 25, D. C.; $1.50.

A Primer on Medical Care Plans

"Making Medical Care Better—and Easier to Pay for, Too," is No. 283 in the Public Affairs Pamphlets Series. The introduction by Eleanor Roosevelt sets the tone in "Prepaid, group medical practice is a modern way to insure the health of the public. It should be encouraged by every progressive individual and community." Here are described

the various types of group practice plans, doctor-industry-labor, community- or co-operative-sponsored, how they work, how the patient chooses his physician, how quality is controlled, what the cost is, and much else that prospective subscribers—and present subscribers—want and need to know.

Its author is free-lance writer, Herbert Yahraes, whose numerous earlier public affairs pamphlets deal with epilepsy, alcoholism, rheumatic fever, diabetes, dental health, and health careers. Illustrations are by Ernest Crichlow.

Public Affairs Pamphlets, 22 East 38th St., New York 16, N. Y., 25 cents. Reductions on quantity orders.

By special arrangement with the Public Affairs Committee readers of the Journal and public health agencies and organizations may obtain single copies at a 20 per cent discount directly from the Health Insurance Plan of Greater New York, 625 Madison Ave., New York 22, N. Y. Greater reductions on quantity orders.

A Statement on Arteriosclerosis

"A Statement for Guidance" on possible means to lessen chances of being a victim of arteriosclerosis and its main killers, coronary thrombosis and brain thrombosis, has been drafted by the National Health Education Committee for widespread distribution. The statement was written and signed by eight cardiac and nutrition specialists, including five former presidents of the American Heart Association.

With the following qualification, the statement suggests five factors that may predispose to arteriosclerosis: "While we realize that a definitive statement may be modified, at least in part, by future research, nevertheless, we believe that on the basis of current evidence and our experience this statement provides information that will prolong life for many at this time."

The five factors listed are: heredity, overweight, elevated blood cholesterol, elevated blood pressure, and excessive cigarette smoking. In each case, "See your physician" is the advice. The statement, together with supporting data, is available from the National Health Education Committee, 135 East 42nd St., New York 17, N. Y. Free.

Two Film Catalogs

The Communicable Disease Center of the Public Health Service has recently published a catalog of motion pictures and filmstrips that are available on loan to state and local health departments and other relevant organizations or for purchase from the United World Films (1445 Park Avenue, New York 29). The films are classified by 12 separate subjects, including public health (general), veterinary public health, epidemiology, laboratory technics, and vector control among them. Requests for a loan should be sent to the chief, Communicable Disease Center, P. O. Box 185, Chamblee, Ga.

Also, recently becoming available is McGraw-Hill's Text-Films. Here the films are divided by school grades. For primary and middle grades there are films on health and safety and physical education. For high schools there are also films on marriage and family living and for college and adult groups the films most related to public health are health education, marriage and family living, mental health and physical education. The films may be either purchased from McGraw-Hill or rented at nominal fees from the nearest educational film library.

Text-Films Department, McGraw-Hill Book Company, 330 West 42nd Street, New York 36. Catalog is free.

Accident Prevention Bibliography

The Committee on Accident Prevention of the American Academy of Pediatrics has prepared a bibliography on

accident prevention for use of the academy's state committees on accident prevention. The academy "would like to encourage its use wherever it might be an effective instrument." Its contents are grouped under 18 separate headings ranging from accident prevention as a world problem to teaching aids for medical students. Included is a list of publishers and their addresses. American Academy of Pediatrics, 1801 Hinman Ave., Evanston, Ill. Free.

Worth Acquiring

"Glaucoma References," an annotated bibliography, has been produced by the Chronic Disease Program staff of the Public Health Service. Designed for the use of professional public health workers and students, the annotations are grouped in four major categories—community aspects, clinical aspects, films, and pamphlets. Diagnosing early glaucoma, treatment, hereditary and geriatric factors, community case-finding and surveys, and vision conservation programs are among the subjects dealt with in the selected references from current literature. PHS Publication No. 664, Government Printing Office, Washington 25, D. C.; 25 cents.

"Identification of School Children Requiring Eye Care" is a report to educators and physicians. The National Medical Foundation for Eye Care describes its purpose as, "to define the problem for the educator, the general physician, and the ophthalmologist, to help all understand it in their relation to each other." The problem is "the health and the conservation of vision of school children." In addition to technical information there are chapters on the objective of a school health program, evaluation, school-physician-parent relation, and follow-up.

The Foundation for Eye Care is made up of ophthalmologists organized to gather, study, and disseminate information to the medical profession and the public relating to scientific eye care. This current report might well be a companion piece for the physician to "Services for Children with Vision and Eye Problems," a guide for public health personnel published by the American Public Health Association.

Single copies of "Identification of School Children Requiring Eye Care" are available free from the National Medical Foundation for Eye Care, 250 W. 57th Street, New York 19. Quantity prices on request.

"When Our Parents Get Old" is an aid to those who meet the problem of how and where an aging parent is to live, if incapacitated, or left alone by death of the partner. There are both hazards and joys in creating a three-generation family. There are tips on how to make such a relationship rewarding for everyone. Understanding the older person, not shutting him out of the world, and most of all not treating him like "an unwieldy parcel of irritating habits" are some of the suggestions. This simply written and illustrated pamphlet might well be on the shelf of the health department for help to those who need to plan for father or mother or both, "in much the same way they once planned for us."

Metropolitan Life Insurance Company, One Madison Avenue, New York City.

The Children's Bureau has recently released a new list of films on Child Life—more than 300—that are of value to professional and citizen's groups, national organizations, and state and local agencies concerned with children. The list contains 32 categories covering the growth and development of children, conditions that handicap them, health and welfare programs and services, child care, family life, food and nutrition, community activities, children in other countries, and safety.

The films reflect the new emphases during the past decade, such as mental health, mental retardation, adolescence, and handicapping conditions.

Each film in the new list has been carefully reviewed by the professional staff of the Children's Bureau and the audience designated that can make use of it in the best way. This completely revised list has a subject index, an alphabetical list of films, and a directory of distributors.

Selected Films on Child Life, Children's Bureau, Publication No. 376. Government Printing Office, Washington 25, D. C.; 30 cents, 25 per cent discount for 100 or more.

Annual Reports

"A Century of Building Family Security" is the title of the 1958 annual report of the Equitable Life Assurance Society of the United States. However, this is really the story of Equitable's "century of service to the American people." The changes that have come to the world, to America and its pattern of life, and to Equitable are dramatized in terms of five generations of an imaginary but typical American family.

The report constitutes a brief social and economic history as well as the history of Equitable's growth, from the first million dollars of insurance in force after the first six months to more than 32 billion in 1958.

But in addition to the company's contributions to family security, there have been equally significant contributions to public health in the very recent history. In 1954 the Bureau of Health was established under the leadership of Howard Ennes. Its first big project was the support of the Health Careers Guidebook which was published in 1955 by the National Health Council and which has been a continuing council project to stimulate "more hands for health." The Guidebook, describing 156 different health jobs, has been distributed to every high school in the country, to vocational counseling agencies, and in many other places. A Health Careers Commission of the council, with the continued support of Equitable among other groups, is stimulating community health career activities throughout the country.

In addition the Bureau of Health has distributed widely among Equitable's policyholders and the general public a series of health education pamphlets entitled, "Assurance of a Fuller Life." The bureau's contribution to the centenary celebration is an animated film on habits, entitled "The Owl and Fred Jones." This will be unveiled at the 87th Annual Meeting of the American Public Health Association in Atlantic City, October 19-23.

"84th Annual Report" of the Evanston (Ill.) Health Department is a handsome tribute to the late Winston H. Tucker, M.D. He was the city's health commissioner for 21 years before his untimely death at the age of 57 in August, 1958. A foreword indicates that one of Dr. Tucker's outstanding accomplishments was his success in getting the citizens to approve fluoridation of the city's water supply. "Exceptionally skilled in coordinating a municipal health department and scientific investigations," "organizing each facet of his department," and "staffing each with skilled dedicated workers," "keen, scientific mind, vision, diligence, devotion to his work" are other tributes.

The publication includes the reports of three other voluntary agencies whose work is closely related to that of the department. These private agencies provided one-fourth of the funds for public health expenditures in Evanston during 1958.

The recently appointed health officer is Edward Press, M.D., former director of field services, American Public Health Association.

Sloan-Kettering Institute for Cancer Research Progress Report XII, May, 1959, is in effect a source book of where we are in "better control and ultimate prevention of cancer in man." It is, however, for the scientist who knows his way about steroid formation and metabolism, knowledge about which has been brought from "guess work to precision." The late Cornelius P. Rhoads, M.D., director of the institute, which is the research unit of the Memorial Center for Cancer and Allied Diseases, pays tribute to all the other research being done in this field in these words, "This report does not mean to imply in any sense that every advance specified was made exclusively at the Sloan-Kettering Institute. Other laboratories have contributed enormously to our understanding and to the total picture."

Sloan-Kettering Institute for Cancer Research, 410 East 68th Street, New York 21, N. Y.

"America's Agency for Alcoholism," the 1958 annual report of the National Council for Alcoholism, outlines among the council's goals "to provide an Alcoholism Information Center for every 50,000 persons in the United States." At present there are 44 in 20 states and 17 proposed, thus adding 10 states to those with such a center.

Published about the same time is the "first printed edition" of the Proceedings of the council's Annual Institute on the Homeless and Institutional Alcoholic. This, the third in an annual series, was convened by a Committee on the Homeless and Institutional Alcoholic, whose chairman, John M. Murtagh, is chief magistrate of New York City.

In this 64-page pamphlet there are statements by respective representatives on rehabilitation potentialities through the law, the Salvation Army, Volunteers of America, Alcoholics Anonymous in a prison setting, a penitentiary program, as well as discussions of indigence and penology in relation to alcoholism. A final chapter on "The Skid Row Subculture" analyzes the pressures that keep a victim there or return him if he escapes. This is a valuable document for those planning an alcoholism program. The National Council on Alcoholism, 2 East 103rd Street, New York 29, N. Y.; $1.

The "Annual Health Report" of Dade County, Fla., is a good description of the "service programs for the use of the citizens of our community" provided by the health department. In addition to its usefulness as a report to the citizens, it serves also as an illustration of the multiplicity of services needed by a growing metropolitan population of nearly a million. In addition to reports of tuberculosis, maternal and child health, sanitation, nursing, and other usual services there are reports and a five-year summary of an anticonvulsive clinic, a developmental evaluation clinic for retarded children organized during the year, and of a new mental health clinic.

Three statistical appendixes indicate some of the problems that confront this southern metropolis. In the city of Miami nearly a fifth of the population is colored. Here the colored birth rate is more than twice that of the white, the infant death rate is almost twice as high, but the total colored death rate is substantially below that of whites. For whites, heart diseases and cancer are the two leading causes of death, for colored, diseases of early infancy take second place to diseases of the heart.

Per capita expenditures for the year were $1.28, of which $1.02 was furnished by the county, 15 cents by the state, and 11 cents by the federal government. Nursing services accounted for 43 per cent of all moneys spent, sanitation for 23 per cent.

T. Elam Cato, M.D., M.P.H., is the county's director of public health, Miami.

NEWS FROM THE FIELD

WHO News

WHO Assembly Technical Discussions

"Health education is a continuing and active process of learning by experience. . . . The real task of health education is to create an environment in which people can study their problems objectively and find solutions satisfying to them." Thus spoke the participants in the technical discussions at the 12th World Health Assembly. The subject, "Health Education of the Public," had previously been considered in seminars or technical discussions in each WHO region with health ministries and other health education agencies in the various countries participating. For these preliminary discussions a "Suggested Outline for Use in Discussing Health Education of the Public" had been provided to member countries.

At the assembly a panel of specialists outlined some basic principles of health education. The success of many health programs depends on such education, which requires careful planning. Since every health worker who comes in contact with people is doing a health education job it is important that the entire health team participate in health education planning. Health education training is essential and should begin in the professional school—medicine, nursing, sanitary engineering, public health—and be continued through inservice or other training. Coordination is essential. A scientific basis for health education can be provided only through research. Serving on the panel were:

Miss A. Wagner, director for the School of Nursing, Central School of Copenhagen County, Denmark

Guillermo Arbona, M.D., M.P.H., secretary of health, Puerto Rico Department of Health

Herbert M. Bosch, M.P.H., professor of environmental sanitation, University of Minnesota, School of Public Health

Dr. V. S. Erchov, head of department, Central Institute for Scientific Research, USSR

Mayhew Derryberry, Ph.D., consultant to WHO for technical discussions

A total of 184 persons registered for the 11 work groups that carried on the discussions initiated by the panelists. Their reports, presented to a later plenary session, are summarized under a number of headings: health education defined, program planning and operation, training of personnel in health education, organization and administration of health education service, studies and research.

Also summarized at a plenary session was the earlier Conference on Health Education at Dusseldorf, Germany, sponsored by the International Union for Health Education. Its chairman, Lucien Viborel of France, who is also secretary general of the International Union, reported that delegates from 50 countries had assembled for the discussion of "Health Education of Children and Adolescents," focusing on three special problems: cooperation; professional training for health education in the family, the school, and the community; and research. Professor Giovanni Canaperia of Italy was elected president of the union; Clair E. Turner, Dr.P.H., its chief counselor; and Howard Ennes, M.P.H., its vice-president for North America. Morey Fields, D.Ed., is United States correspondent for the union's journal.

The report on the technical discussion at the WHO Assembly may be available from Mayhew Derryberry, Ph.D., Bureau of State Services, PHS, or ANCHEP.

The proceedings of the Dusseldorf Conference are fully reported in the July, 1959, issue (Vol. II, No. 3) of the International Journal of Health Education. Information as to subscription from: American National Council for

Health Education of the Public, Room 3013, 120 Broadway, New York 5, N. Y.

Education Reports Available

"The Foreign Student and Post-Graduate Public Health Courses" and "Preventive Aspects in the Teaching of Pathology" are the respective titles of the Sixth and Seventh Reports of the WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel.

The Sixth Report presents a guide on the needs and some of the problems of foreign students in public health schools. It indicates that rapid social and intellectual orientation is the first requisite of the student in his class. This presupposes some familiarity of the teacher with the student's home country. Beyond this, teaching should be in small groups. Field training is an essential element. The committee emphasizes the need for establishing minimum requirements for such training throughout the world.

In the Seventh Report the committee gives evidence for its belief that the pathology teacher is in an excellent position to focus medical students' attention on the preventive approach to disease. The pathologist, tracing the origin and evolution of lesions, can visualize for students the different stages in which disease can be reversed and those beyond which prevention and cure are increasingly difficult. This report stresses the importance of a closer integration between pathology and other subjects throughout the students' undergraduate years, with special emphasis being placed on the types of diseases and medical problems common today. The committee gives examples of those problems which pathology can help to solve through appropriate preventive teaching of medical students.

E. L. Stebbins, M.D., director, Johns Hopkins School of Hygiene and Public Health, was chairman of the committee for the Sixth Report. J. B. Collip, M.D., dean, Faculty of Medicine, the University of Western Ontario, Canada, chaired the committee for the Seventh Report.

Columbia University Press, 2960 Broadway, New York 27, N. Y.; 30 cents each (also in French and Spanish).

A New Personality

"It is a mythical creature, of course" —the ideal international health worker. But during the past ten years a new personality in world health—the WHO field project worker—has begun to emerge with an ever more distinct character and profile of his own.

This emissary of health must bring technical qualifications, integrity, and objectivity to his job in the field the day it begins. But before the end of that day he may also be called on to perform in a way that is completely foreign to his cultural and social training. As an article in "World Health" (July/Aug., 1959) suggests, he cannot refer to his school notes if it is a question of accepting "a desert sheikh's proffered hospitality when it consists of curdled milk on which you can count the fly specks." The article, "The International Health Worker," indicates that the successful practitioner has had to become a specialist in adapting to the unusual.

The article deals briefly but strikingly with the dangers of "overenthusiasm," the demands on the worker to always be a sympathetic guest, and with many of the challenges he faces as a salesman of good health practice. Pictures complement the story well.

Stills from the new WHO film on trachoma prevention, "Open Your Eyes," are also given space in this issue. The film is set in Arabia and is available in English, Arabic, and French at the Center for Mass Communication, Columbia University Press, 1125 Amsterdam Avenue, New York 25, N. Y. One may ask to be put on the mailing list for the WHO bimonthly "World Health" through

the Pan American Sanitary Bureau, 1501 New Hampshire Avenue, Washington 6, D. C.

Cabinet Members on Aging Council

President Eisenhower, signifying the importance he attaches to solving the problems of the aging, has chosen several members of his cabinet to act as a Federal Council for the Aging. The council is made up of his secretaries of agriculture, commerce, labor, and the treasury, with Arthur S. Flemming, secretary of health, education, and welfare, appointed as chairman. The President has asked this group for an analysis and evaluation of the various federal programs affecting older people.

Alcoholism to Health Department

The Massachusetts State Health Department is now responsible for the alcoholism program of the state through a new Division of Alcoholism. By act of the recent legislative session the Office of the Commissioner on Alcoholism and its powers, duties, and personnel have been transferred to the State Health Department. It is now expected that the division will be a multi-functional agency focusing on treatment, education, research, and coordination in addition to administration of 14 state-sponsored alcoholism clinics. The former commissioner, Harold W. Demone, Jr., heads the new division in the State Department of Health.

Another Voice Heard on Free Choice

The Commerce and Industry Association of New York, in connection with the overhaul of the New York State workmen's compensation system, has gone on record as supporting a modification of the "free choice of physician" system. The reasons, as explained by the association's Social Security Director, is its belief that the injured worker does not get the best medical care under the free choice system. On the contrary, better medical care would be assured by restricting workmen's compensation payments to panels of specialists.

Practical Nursing School List

The 1959 list of approved schools of practical nursing, together with their admission policies and minimum state prenursing academic requirements, is now available in "Let's Be Practical About a Nursing Career." Together with text this is designed for use in counseling prospective students about career and education opportunities in practical nursing.

National League for Nursing, Inc., Committee on Careers, 10 Columbus Circle, New York 19, N. Y.; single copies free.

Nutritionists Confer

A Report of the Seventh Conference of Directors of Graduate Programs in Public Health Nutrition, held at Columbia University, April 10-11, 1959, is now available. The conference was attended by faculty members of 13 colleges and universities offering programs of graduate study in public health and community nutrition, by directors of nutrition services in nine state and local health departments, and by representatives of the Public Health Service, the Children's Bureau, the Food and Agricultural Organization of the UN, and the Puerto Rico Department of Health.

The conference examined problems in the education and training of public health nutritionists, including academic work and field training, and discussed opportunities in the field of public health nutrition. One of the most important problems now confronting the profession is that of recruitment. The recent availability of scholarships for study in ap-

proved institutions represents an attempt to increase the number of trained personnel. Closely related to recruitment is the question of training, both academic and field. While graduate education for public health nutritionists is desirable, and even necessary, the value of undergraduate courses leading to a bachelor's degree should not be overlooked, from the point of view both as recruitment for graduate study candidates and as a source of junior personnel.

Ruth Hueneman, D.Sc., associate professor of nutrition, University of California School of Public Health, succeeded Martha F. Trulson, D.Sc., assistant professor at the Harvard school, as chairman of the conference. Further information may be obtained from the latter, 1 Shattuck St., Boston 15, Mass.

An Ehlers Memorial

The late V. M. Ehlers has been memorialized by an oil painting of the former director of sanitary engineering, Texas State Health Department. The painting was presented by his widow to the State Health Department in a recent ceremony in which Ehlers' successor, G. R. Herzik, served as master of ceremonies The oil portrait was accepted on behalf of the department by the newly appointed health commissioner, J. E. Peavy, M. D., former director of communicable disease control. Present at the ceremony were Mrs. Ehlers and their four children, one of whom, the Rev. Emmett Ehlers, offered the benediction at the presentation ceremonies.

Mr. Ehlers had served in the State Health Department for 44 years, his efforts dedicated to improve the quality of water and sewage treatment and to other public health measures.

State Mental Retardation Service

An Office of Mental Retardation has been organized in the New York State Department of Mental Hygiene. Its purpose will be to coordinate institutional programs and activities with the work of the department's various units, emphasizing improvement of patient-care in institutions, development of improved training activities, the development of community programs for the mentally retarded, and maximum possible placement of suitable patients in the community. The directors of the new office are: Arthur W. Pense, M.D., deputy commissioner, and Joseph L. Camp, M.D., newly appointed deputy assistant commissioner.

New Regional Office in Illinois

A sixth regional office of the Illinois Department of Public Health has been established. Known as the Chicago Metropolitan Area Regional Office, it is located in Chicago at the Chicago State Tuberculosis Sanitarium. Like the other regional offices it will serve in a coordinating capacity among existing health agencies, particularly to promote necessary and effective health services in this area of rapidly expanding population.

Claire E. Healey, M.D., is the regional health officer with support by sanitary engineer B. J. Leland, and public health nurse Mildred Moore. Mr. Leland also directs the State Sanitary Water Board.

A Borden Award for Canada

The Nutrition Society of Canada has established an annual award in recognition of outstanding research work done by one of its members. The first award will be made in June, 1960. Since the main purpose of the award is to encourage research activities by younger members of the society, the recipient must be under forty and must have published within the preceding three years the meritorious work on which the award is based.

The award is supported by the Borden Company Foundation.

Statistics for Social Scientists

The Department of Statistics of the University of Chicago has available awards for study in statistics by persons whose primary field is the physical, biological, or social sciences to which statistics can be applied. The awards range from $3,600-$5,000 on a nine-month, or $4,400-$6,000 on an 11-month basis. The program has been made possible by a grant from the Rockefeller Foundation. Closing date for application for the academic year 1960-1961 is February 15, 1960. Further information from the Department of Statistics, Eckhart Hall, University of Chicago, Chicago 37, Ill.

AMA House of Delegate Decisions

The House of Delegates of the American Medical Association at the 108th Annual Meeting in Atlantic City, June 8-12, took action on a number of matters, including Social Security, general practice, the relations between medicine and osteopathy, and free choice and medical care plans.

As to the first, only one of five resolutions presented was approved. This reaffirmed the Association's opposition to compulsory inclusion of physicians in Social Security coverage.

A report of the Committee on Preparation for General Practice was approved. The committee recommends a new two-year internship program for medical school graduates planning to become family physicians. The suggested plan is for a basic minimum of 18 months' hospital training in the diagnostic, therapeutic, psychiatric, preventive and rehabilitative aspects of medicine and pediatrics in a very broad sense, and six months for training in other segments of the program.

On the basis of a report of the Judicial Council it was recommended that a joint liaison committee of the AMA and the American Osteopathic Association meet "to consider problems of common concern including interprofessional relationships on a national level." It was further agreed that it was not contrary to the Principles of Medical Ethics for physicians to teach in an osteopathic college that is in process of being converted into an approved medical school. It was urged that medical practice acts require all who practice medicine or surgery to meet the same qualifications.

In order to maintain the principle of free choice, the medical profession was asked "to discharge more vigorously its responsibility for assuring the competency of physicians' services and their provision at a cost which people can afford."

As to medical care plans, "the widest possible choice" of the plans should be available to those who receive medical care benefits through collective bargaining. Medical plans should increase their health education and information concerning the coverage of their subscribers. A study should be made with respect to removing "the requirement of hospital admission as the only condition under which payment of certain benefits will be made."

PERSONALS

GAYLORD W. ANDERSON, M.D., Dr.P.H.,* director, University of Minnesota School of Public Health, is the recipient of the 1959 Francis Harrington Memorial Award of the Minneapolis Junior Chamber of Commerce.

TIMOTHY D. BAKER, M.D., M.P.H.,* former Syracuse district health officer, New York State Department of Health, is now in the office of the assistant dean, Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

W. RODERICK BROWN, M.D., formerly with the Pittsburgh Tuberculosis Hospital and Tuberculosis League Hospital, now is director of tuberculosis control, Allegheny County (Pa.) Health Department.

MARY F. CHAMPLIN, M.P.H.,* former executive, Health Division, Allegheny County Health and Welfare Association, who has just completed a three-year health education

* Fellow.

project of the Ford Foundation in India, now is chief, Office of Health Education, Allegheny County Health Department.

OLIVE B. CORDUA, M.D., chief, Bureau of Maternal and Child Health, San Diego Department of Public Health, has retired after 34 years with the department.

H. TRENDLEY DEAN, D.D.S.,* former secretary, Council on Dental Research, American Dental Association, has retired and been succeeded by SHOLOM PEARLMAN, D.D.S., former assistant secretary, ADA's Council on Dental Therapeutics. Dr. Dean was a 1952 winner of an American Public Health Association Lasker Award for pioneer research, together with FREDERICK S. MCKAY, D.D.S., on the effects of adding fluoride to public water supplies.

JOHN W. FERREE, M.D., M.P.H.,* associate medical director, American Heart Association, has resigned to become executive director, National Society for the Prevention of Blindness.

ALVIN F. GARDNER, D.D.S., D.D.P.H.,* former postdoctorate research fellow, National Institute of Dental Health, has been appointed associate professor of pathology, University of Maryland, Baltimore.

JAMES L. GODDARD, M.D., M.P.H.,† chief, accident prevention program, Public Health Service, has been detailed to the Federal Aviation Agency to fill the new post of Civil Air Surgeon.

JAMES T. GOOGE, M.D.,* former director, Erie County (Pa.) Department of Health, is now health officer of the newly organized full-time health department of Black Hawk County (Iowa) Health Department, Waterloo.

MATTHEW H. GRISWOLD, M.D., Dr.P.H.,* chief, Division of Cancer and Other Chronic Diseases, Connecticut State Health Department, has retired after 23 years of service to the department.

ROBERT H. HAMLIN, M.D., M.P.H.,* assistant to the secretary of the Department of Health, Education, and Welfare, has resigned to become associate professor of public health administration, Harvard University School of Public Health.

JOHN H. HAYES,† who is consultant to Lenox Hill Hospital, New York, has retired as chairman, Committee on Careers, National League for Nursing, to be succeeded by FRED C. FOY, chairman of the board and president, Koppers Company, Pittsburgh, who has been a member of the committee since its inception.

* Fellow.
† Member.

GEORGE JAMES, M.D., M.P.H.,* former deputy in charge of planning and research, has been named first deputy commissioner, New York City Department of Health, succeeding ROSCOE P. KANDLE, M.D., M.P.H.,* now New Jersey commissioner of health.

MARTIN M. KAPLAN, V.M.D.,† chief, Veterinary Public Health Division of Communicable Diseases, WHO, is on a year's leave of absence at the Wistar Institute of Philadelphia.

LORIN E. KERR, M.D.,* assistant to the executive medical officer, United Mine Workers of America, Welfare and Retirement Fund, has been appointed visiting professor, Department of Preventive Medicine and Public Health, Howard University College of Medicine, Washington, D. C.

CHARLES GLEN KING, Ph.D.,* former executive director, Nutrition Foundation, and treasurer, American Public Health Association, is a newly elected member, Board of Directors, U. S. Committee for UNICEF.

BEN D. KININGHAM, JR., M.P.H.,* executive director, Illinois Tuberculosis Association, received the Alma B. Fringer Memorial Award at the recent meeting of the Illinois Tuberculosis Association, presented annually to an Illinois person who has given "truly outstanding service in the field of tuberculosis—over and beyond the call of duty."

J. KENNETH KIRK, formerly head of the Boston District, has been transferred to Washington to fill the new position of assistant to the commissioner for regulations making, U. S. Food and Drug Administration.

FRANK H. KRUSEN, M.D., senior consultant in physical medicine, Mayo Clinic, is on a three-month loan to the Office of Vocational Rehabilitation to advise on long-range medical programs and help strengthen administrative direction of medical responsibilities.

JOHN R. MCGIBONY, M.D.,* professor of medical and hospital administration, University of Pittsburgh, has resigned to become visiting professor of administrative medicine, All-India Institute of Medical Sciences, New Delhi, and consultant to the Ministry of Health of India, on assignment through the Public Health Service and the State Department.

LAWSON D. MATTER,† civil defense vice-chairman and coordinator for public water supplies, Pennsylvania State Health Department, has resigned after 40 years of service with the department.

PAULINE K. MATTHIS, M.P.H.,* former associate in program development, National Tuberculosis Association, is new associate executive, Indiana Tuberculosis Association.

SHERWIN MELLINS, M.D., formerly in private practice, has been appointed attending clinic physician, Division of Crippled Children, Connecticut State Department of Health.

CAPTAIN ISADOR W. MENDELSOHN,* former sanitary engineer with the Interior Department, has been transferred to the International Cooperation Administration for service in South Korea.

JERROLD M. MICHAEL, M.P.H.,* former training consultant, Environmental Health Training Section, Communicable Disease Center, has been appointed assistant chief, Training Branch, Division of Health Mobilization, Public Health Service, Washington, D. C.

PAUL R. MICO,† director, Division of Health Education, Wyoming State Health Department, has resigned to join the faculty of the University of California School of Public Health as health educator for its contract with the USPHS Division of Indian Health, stationed on the Navajo Indian Reservation, Tuba City, Ariz. Succeeding him is ALLEN M. A. BUCKINGHAM, M.P.H.,* former health educator with the University of California School of Public Health, Navajo Indian Reservation, Window Rock, Ariz.

DALE POHL, who recently completed a one-year internship in public administration with the department, has been appointed administrator, Division of Local Health Services, Kansas State Health Department.

ARTHUR E. RIKLI, M.D.,† former chief of program services, has been appointed chief, Heart Disease Control Program, USPHS. He succeeds R. C. ARNOLD, M.D., who has been appointed Assistant Surgeon General for Personnel and Training.

MORRIS SCHAEFFER, M.D., Ph.D.,* former director, Virus and Rickettsia Laboratories, the U. S. Public Health Service's Communicable Disease Center, has resigned to become director, Bureau of Laboratories, New York City Department of Health, member of the Public Health Research Institute in New York City, and professor of medicine, New York University-Bellevue Medical Center.

WILLIAM P. SHEPARD, M.D.,* former chief, Health and Welfare Division, Metropolitan Life Insurance Company, has been named chief medical director of the company. GEORGE M. WHEATLEY, M.D.,* third vice-president, has succeeded to the directorship of the Health and Welfare Division.

ERNEST I. STEWART, Ph.D.,† former associate professor and chief pre-medical advisor, Columbia University, is now professor and assistant dean, College of Liberal Arts, Arizona State University, Tempe.

JOHN H. TALBOTT, M.D., professor of medicine, University of Buffalo School of Medicine, has succeeded JOHNSON F. HAMMOND, M.D., as director, Division of Scientific Publications, American Medical Association, and editor, Journal of the American Medical Association. Dr. Hammond, on the staff for 37 years, will continue on the journal staff.

HELEN M. WALLACE, M.D., M.P.H.,* former professor of maternal and child health, School of Public Health, University of Minnesota, is now with the U. S. Children's Bureau, Washington, D. C.

FRANCIS J. WALTERS, D.D.S.,* dental consultant, Denver Regional Office, Public Health Service, has been transferred to the U. S. Coast Guard Academy, New London, Conn.

LEWIS D. WILLIAMS, M.D., former acting district medical director, Chester County, has been appointed medical director, Regional Office, Meadville, Pennsylvania State Health Department.

GEORGE N. WRIGHT, Ph.D., former rehabilitation counselor, Indiana Vocational Rehabilitation Division, has been appointed program director, National Epilepsy League, Chicago.

SIR HARRY WUNDERLY, former director, Division of Tuberculosis, Australian Department of Health, now retired, has been appointed WHO consultant on tuberculosis control, Federation of Malaya.

MARK V. ZIEGLER, M.D.,† medical director, Reading Regional Office, Pennsylvania State Health Department, resigned June 23 to become assistant commissioner of health, Baltimore, Md.

JOHN H. ZIMMERMAN, M.D., former practicing pediatrician of Greensburg, is now chief, Infant and Pre-School Section, Pennsylvania State Health Department.

DEATHS

RICHARD A. BOLT, M.D.,* on August 17. Dr. Bolt who retired in 1948 was formerly assistant professor of child hygiene, University of California, and director of health centers Alameda County and medical director for schools in Oakland and Berkeley (Calif.) (Maternal and Child Health Section).

PROFESSOR WILLIAM M. FRAZER, O.B.E.,* medical officer of health, Cheshire, England (Honorary Fellow).

CHANNING FROTHINGHAM, M.D.,† of Chestnut Hill, Mass. (Medical Care Section).

HOWARD WHIPPLE GREEN,* secretary of the Cleveland (Ohio) Health Council for 34

* Fellow.
† Member.

years, on July 8 (Public Health Education Section).

WILLIAM L. HUTTON, M.D.,† director and minister of health, Brantford County Health Unit, Ontario, Canada, on July 30 (Health Officers Section).

PORTIA G. IRICK, R.N.,* director, Division of Public Health Nursing, New Mexico Department of Public Health, on June 25 (Public Health Nursing Section).

FREDERICK S. MCKAY, D.D.S., on August 31. Dr. McKay in 1952 was an APHA Lasker Award winner.

CHRISTOPHER L. MENGIS, M.D.,* of St. Landry Parish Health Unit, Opelousas, La., on July 10 (Health Officers Section).

CONFERENCES AND DATES

American Public Health Association, 87th Annual Meeting, Atlantic City, N. J., October 19-23.

State and Regional Public Health Meetings—October, November, and December:

California, Northern, Public Health Association. Palo Alto. November 5.

California, Southern, Public Health Association. November 6.

Connecticut Public Health Association. Wethersfield High School, Wethersfield. November 18.

Hawaii Public Health Association. Honolulu. November 10.

Maryland Public Health Association. Tidewater Inn, Easton. October 9.

Mississippi Public Health Association. Robert E. Lee Hotel, Jackson. December 2–4.

Oregon Public Health Association. Court House, Eugene. November 3–5.

Washington Public Health Association. Port Angeles. November 2–3.

Meetings of Other Organizations—October, November, and December:

Academy of Psychosomatic Medicine. Cleveland, Ohio. October 15–17.

American Academy of Cerebral Palsy. Los Angeles, Calif. November 30–December 2.

American Academy of Pediatrics. Palmer House, Chicago, Ill. October 3–8.

American Association of Poison Control Centers. Palmer House, Chicago, Ill. October 6.

American Association of Medical Record Librarians. Statler Hotel, Boston, Mass. October 13–16.

American Cancer Society. Biltmore Hotel, New York, N. Y. October 26–27.

American Heart Association. Philadelphia, Pa. October 23-27.

American Medical Association. Clinical Meeting. Dallas, Tex. December 1–4.

American Medical Women's Association. Hot Springs, Ark. November 12–15.

American Occupational Therapy Association. Morrison Hotel, Chicago, Ill. October 16–23.

American Psychiatric Association. Detroit, Mich. October 29-31.

American Public Welfare Association. Statler Hotel, Washington, D. C. November 29–December 5.

American Society of Tropical Medicine and Hygiene. Indianapolis, Ind. October 28–31.

Association of American Medical Colleges. Edgewater Beach Hotel, Chicago, Ill. October 28–November 4.

Association of State and Territorial Health Officers. Washington, D. C. October 14–16 (tentative).

Conference on Clinical Anticancer Drug Research. U. S. Public Health Service. Washington, D. C. November 11–12.

Muscular Dystrophy Associations of America. New York, N. Y. October 13.

National Association for Mental Health. Sheraton Hotel, Philadelphia, Pa. November 17–20.

National Association for Retarded Children. Netherlands-Hilton Hotel, Cincinnati, Ohio. October 21–24.

National Conference on Physicians and Schools. Moraine-on-the-Lake Hotel, Highland Park, Ill. October 13–15.

National Defense Transportation Association. Seattle, Wash. October 11–14.

National Rehabilitation Association. Statler Hotel, Boston, Mass. October 26–28.

National Safety Council. Conrad Hilton Hotel, Chicago, Ill. October 19–23.

National Social Welfare Assembly. New York, N. Y. December 8–10.

National Society for Crippled Children and Adults. Palmer House, Chicago, Ill. November 29–December 2.

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